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THE
Gentleman's Diary,
OR THE
MATHEMATICAL REPOSITORY;

P.P. 2465
2

An ALMANACK

For the YEAR of our LORD 1751.

Being the Third after BISSEXTILE,
or LEAP YEAR.

Containing many uſeful and entertaining Particulars, peculiarly adapted to the ingenious Gentlemen engaged in the Study and Practice of the

MATHEMATICKS.

The Eleventh *Almanack* ever publiſh'd of this Kind.

——— Quâ causâ argentea Phœbe
Paſſibus haud æquis graditur; cur ſubdita nulli
Hactenus Aſtronomo numerorum fræna recuſat:
Cur remeant Nodi, curque Auges progrediuntur.
——— Quantis refluum vaga Cynthia pontum
Viribus impellit; dum fractis fluctibus ulvam
Deſerit, ac Nautis ſuſpectas nudat arenas,
Alternis vicibus ſuprema ad littora pulſans.

LONDON;
Printed for the Company of STATIO[illegible]
MDCCLI.

ARITHMETIC

Made plain and eaſy, and Taught to Youth, *&c.* in a *New* and *Entertaining* Method; whereby the Scholar is led on with Pleaſure and Delight in that moſt uſeful Science, in every Part and Branch thereof,

By JOHN HOLLINGWORTH,

of *Furneux-Pelham,* near *Buntingford, Hertfordſhire.*

ADVERTISEMENT.

ARTIFICIAL TEETH, ſet in ſo firm, as to eat with them; and ſo exact, as not to be diſtinguiſhed from natural: They are not to be taken out at Night, as is by ſome falſly ſuggeſted, but may be worn Years together; yet are they ſo fitted, that they may be taken out and put in by the Perſon who wears them, at Pleaſure, and are an Ornament to the Mouth, and greatly help the Speech: Alſo Teeth are cleaned and drawn by *Samuel Rutter* and *William Green*, Operators, who apply themſelves wholly to the ſaid Buſineſs, and live in *Racquet Court, Fleet-ſtreet, London.*

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N. B. The ſaid *THOMAS PEAT* Boards and Inſtructs Youth in ſeveral uſeful Parts of the Mathematicks, *&c.*

JANUARY hath XXXI Days.

Last Quarter 8 Day at 1 in the Morning.
New Moon 15 Day at 10 at Night.
First Quarter 22 Day at 7 at Night.
Full Moon 29 Day at 10 at Night.

1	T	Circumciſion. New Years Day	heart	5 A 14	0 M 7
2	W	*This Year will begin with ſome ſort*	and	6 30	1 0
3	T	*of Weather, which expect winterlike*	back	7 45	1 50
4	F	**Notting. Epiph. Fair** is al-	bow	9 0	2 35
5	S	ways the 1ſt Fr. aft. Jan. 2.	belly	10 10	3 20
6	F	Epiph. CHRIST's Star appears	reins	11 18	4 0
7	M	Days are now 8 ho. [to Gentiles	and	Morn.	4 41
8	T	and Nights 16 ho. long	loins	0 34	5 25
9	W	Days inc. and Night dec. 50m.	ſecre	1 31	6 8
0	T	*Froſt, or cold Rain or Snow*	blad.	2 40	6 54
1	F	*may be expected now abouts.*	thig.	3 41	7 41
2	S	Days 8 ho. and a quarter long	hips	4 42	8 33
3	F	**1 Sunday after Epiphany**	kne.	5 34	9 25
4	M	Hilary	and	6 11	10 17
5	T	**Oxf.** Hil. and **Cam.** L. T. beg.	ham	6 47	11 9
6	W	*Cold, winterly, and wet may well*	legs	☽ Sets	0 A 0
7	T	*be expected about the middle.*	ank.	6 A 15	0 50
8	F	Da. inc. and N. dec. 1 h. 18m.	feet	7 37	1 40
9	S	[Pr. of WALES born 20th	toes	8 58	2 30
0	F	**2 Sunday after Epiphany**	head	10 21	3 20
1	M	**Agnes** Oct. Hil. 1. Ret.	face	11 45	4 10
2	T	*Not very unpleaſant*	neck	Morn.	5 6
3	W	**Hillary Term begins**	thro.	1 3	6 0
4	T	*for the Seaſon, but perhaps*	arms	2 21	6 58
5	F	**St. Paul's Converſion**	and	3 32	7 57
6	S	*ſome Downfall, but not long*	ſhou.	4 32	8 55
7	F	**3 Sunday after Epiphany**	brea.	5 19	9 51
8	M	Quind. Hill. 2 Ret.	ſtom	5 58	10 43
9	T	*without rough Winds and Storms.*	hear.	6 22	11 33
0	W	K. CHARLES I. martyr'd at	back	☽ Riſes	Morn.
1	T	Whitehall 12′ paſt 1, 1648-9	bow	6 A 33	0 20

M D	Sun Riſes.		Sun Sets.		Day Breaks.		Sun's Decl.		Watch. too faſt	
6	8	1	4	0	5	50	20 S	44	10	47
12	7	42	4	8	5	44	19	26	12	30
18	7	42	4	19	5	37	17	54	13	45
24	7	31	4	30	5	27	16	12	14	30
31	7	18	4	42	5	15	14	0	14	48

FEBRUARY hath XXVIII Days.

Laſt Quarter 6 Day at 10 at Night.
New Moon 14 Day at 10 in the Morning.
Firſt Quarter 21 Day at 3 in the Morning.
Full Moon 28 Day at 1 Afternoon.

M D	W D	Sundays, Holydays, remarkable Days, Length, Incr. and Dec. of Days, Terms, Returns, Weat. &c	Moon Signs	Moon Rising & Setting		Moon Southing.	
1	F	Days are now 9 ho. 25 m. long	belly	7	54	1 M	5
2	S	Purification. Candlemas Day	reins	8	56	1	48
3	F	Septuageſima Sunday	and	10	3	2	30
4	M	Craſt. Purif. 3 Ret.	loins	11	12	3	14
5	T	*Expect cold*	ſecr.	Morn.		4	0
6	W	*Winds, with*	blad.	0	20	4	44
7	T	*driving Rain,*	hips	1	23	5	39
8	F	*Sleet, or Snow.*	and	2	24	6	19
9	S	Octab. Purif. 4 Return	thig.	3	19	7	19
10	F	Sexageſima Sunday	knee	4	4	8	9
11	M	Days 10 hours 10 min. long	ham.	4	45	8	54
12	T	Hilary Term ends	legs	5	12	9	45
13	W	Days are now increas'd, and	ankl.	5	38	10	37
14	T	**Valentine**	feet	☽ Sets		11	28
15	F	Nights ſhorten'd 3 hours	toes	6 A	36	0 A	21
16	S	*Expect pretty open Weather*	head	8	0	1	12
17	F	Quinquageſ. Shrove Sunday	and	9	25	2	5
18	M	Days 10 h. and 40 min. long	face	10	50	3	1
19	T	*but perhaps inclin'd to Froſt.*	neck	Morn.		3	59
20	W	Aſh Wedneſd. firſt Day of Len	thro.	0	12	4	56
21	T	*windy, but not*	arms	1	25	5	53
22	F	Princeſs of HESSE born	ſho.	2	27	6	51
23	S	*very cold, now*	brea.	3	18	7	48
24	F	Quadrageſ. St. MATTHIAS Ap	ſto.	4	7	8	49
25	M	**Fair at Nottingham**	heart	4	29	9	28
26	T	*and to the End.*	back	4	52	10	20
27	W	Ember Week	bow	5	16	11	4
28	T	Days incr. 4 ho. and 2 min.	belly	☽ Riſes		11	49

M D	Sun Riſes.		Sun Sets.		Day Breaks		Sun's Declin.		Watch too faſt.	
6	7	6	4	54	5	3	11 S	57	14	32
12	6	54	5	6	4	54	9	48	13	50
18	6	40	5	20	4	40	7	32	12	47
24	6	28	5	32	4	28	5	15	11	27
28	6	20	5	40	4	18	3	40	10	22

MARCH hath xxxi Days.

Laſt Quarter 8 Day at 30 min. paſt 5 Evening.
New Moon 15 Day at 9 at Night.
Firſt Quarter 22 Day a Quarter paſt Noon.
Full Moon 30 Day at 6 in the Morning.

1	F	**David. Chad B.**	belly	6 A	43	12	3
2	S	Day 11 ho. 34 min. long	reins	7	54	0 M	3
3	F	2 Sunday in Lent	loins	9	0	1	1
4	M	*March Winds now blow*	ſecr.	10	8	1	5
5	T	*with Sleet or Snow*	and	11	15	2	4
6	W	*all England thro'.*	blad.	Morn.		3	3
7	T	Days 11 ho. 50 min. long	hips	0	18	4	1
8	F	Equal Day and Night	thig.	1	13	5	[illegible]
9	S	☉ in ♈ at 12 at Night	kne.	2	4	6	[illegible]
10	F	3 Sunday in Lent	and	2	44	6	5
11	M	in all the habitable world	ham	3	15	7	4
12	T	*Pretty much Downfall*	legs	3	42	8	33
13	W	Days incr. 4 h. 54 min.	ankl.	4	7	9	22
14	T	Prince Edward born	feet	4	29	10	11
15	F	☉ due E. 6h. 7m. Alt. 2° 57′	toes	4	51	11	4
16	S	*More fair and pleaſant*	head	☽ Sets		11	57
17	F	4 Sund. in Lent, or Midlent S.	face	8 A	31	0 A	55
18	M	Days 12 hours 36 min. long	neck	9	58	1	53
19	T	☉ Amplitude 7° North	thro.	11	13	2	53
20	W	**Cuthbert**	arms	Morn.		3	54
21	T	☉ due E. 6h. 14m. Alt. 5° 52′	ſho.	0	26	4	55
22	F	*Inclin'd to Froſt,*	brea.	1	25	5	5
23	S	*but a favourable*	ſtom	2	8	6	47
24	F	5 Sunday in Lent	heart	2	40	7	3
25	M	Annunciation. Lady Day	and	3	8	8	25
26	T	*Seed-time now*	*mind*	3	28	9	11
27	W	Days 13 hours 12 min. long	bow	3	48	9	5
28	T	*and to the End*	belly	4	5	10	37
29	F	*of the Month.*	reins	4	23	11	2
30	S	Days incr. and Ni. ſh. 6h. 1 qu.	and	☽ Riſes		Morn.	
31	F	6 Sunday in Lent. Palm Sund.	loins	8 A	5	0	3

M D	Sun Riſes.		Sun Sets.		Day Breaks.		Sun's Declin.			Watch too faſt.	
6	6	7	5	53	4	4	1	S	18	8	40
12	5	54	6	6	3	50	1	N	5	6	50
18	5	42	6	18	3	35	3		24	5	0
24	5	30	6	31	3	19	5		45	3	7
31	5	15	6	46	3	0	8		20	1	5

APRIL hath xxx Days.

Laſt Quarter 7 Day at 9 in the Morning.
New Moon 14 Day 30 m. paſt 5 in the Morning.
Firſt Quarter 20 at half Hour paſt 10 at Night.
Full Moon 28 a Quarter paſt 10 at Night.

1	M	All Fools! — *None wiſe!*	ſecr.	9 A	12	0 M	50
2	T	*except* (ſome) *weather-wiſe!*	blad.	10	15	1	35
3	W	*and* (ſome) *otherwiſe!*	thig.	11	17	2	22
4	T	Fair at Nottingham	and	Morn.		3	12
5	F	GOOD FRID. Our SAV Crucif	hips	0	6	4	0
6	S	Day 13 hours 48 min. long	knee	0	50	4	50
7	F	EASTER DAY. Our SAV. Reſ	ham	1	22	5	40
8	M	Eaſter Monday	legs	1	51	6	30
9	T	Eaſter Tueſday	ankl.	2	15	7	18
10	W	Days are now increas'd, and	feet	2	36	8	7
11	T	Nights ſhorten'd 6 ho. 3 qua.	*corns*	3	2	8	57
12	F	*Expect ſeaſonable Showers*	*horns*	3	22	9	49
13	S	*and Fine ſpringing Weather*	face	3	40	10	43
14	F	1 Sund. after Eaſter. Low Sund	neck	☽ Sets		11	40
15	M	Prince WILLIAM born	*gullet*	8 A	57	0 A	42
16	T	*and (perhaps) ſome Thunder.*	arms	10	13	1	45
17	W	Oxf. and Cam. Eaſt. Terms b	ſho.	11	20	2	49
18	T	Days 14 hours 32 min. and	brea.	Morn.		3	47
19	F	Night 9 ho. 28 min. long	ſtom	0	7	4	45
20	S	*Now more windy, but*	and	0	48	5	40
21	F	2 Sunday after Eaſter. Miſerere	*pluck*	1	22	6	28
22	M	*not without ſome* [Qu. Paſch 1 R.	back	1	39	7	15
23	T	St. George, *He was for England.*	bow	2	0	8	1
24	W	Term begins *Showers.*	belly	2	19	8	42
25	T	St. MARK the Evangeliſt	reins	2	37	9	24
26	F	*Still expect fruitful Showers,*	and	2	54	10	7
27	S	*and fine ſpringing Weather, now*	loins	3	11	10	50
28	F	3 Sunday after Eaſter. Jubilate	ſecr.	4	32	11	36
29	M	*and to the End.* [Tr. P. 2 Ret.	blad.	☽ Rises		Morn.	
30	T	Day 15 ho. 12 min. long	thig.	9 A	12	0	25

M D	Sun Riſes.		Sun Sets.		Day Break.		Sun's Decl.		Watch too ſlow.	
6	5	6	6	54	2	51	10 N	30	0	26
12	4	55	7	5	2	32	12	32	1	39
18	4	44	7	16	2	12	14	30	2	48
24	4	34	7	26	1	53	16	15	3	33
30	4	24	7	36	1	35	17	53	3	58

MAY hath XXXI Days.

Laſt Quarter 6 Day at 9 at Night.
New Moon 13 Day at 1 Afternoon.
Firſt Quarter 20 Day 36 min. paſt 10 Morning.
Full Moon 28 Day 3 qu. paſt 1 Afternoon.

1	W	St. PHILIP and JACOB	thig.	10 A	6	1 M	12
2	T	*Windy, but moſtly fair*	hips	10	50	2	0
3	F	*Weather, may be expected*	kne.	11	26	2	50
4	S	*about the beginning.*	legs	11	58	3	40
5	F	4 Sunday after Eaſter	and	Morn.		4	30
6	M	Menſ. Paſch. 3 Return	ankl.	0	24	5	17
7	T	☉ Ampl. 34° 15′ North	feet	0	43	6	3
8	W	Days 15 h. 38 min. long	toes	1	5	6	50
9	T	*Now more ſhowry,*	head	1	25	7	40
10	F	☉ due E. 7 m. Alt. 25° 28′	face	1	44	8	30
11	S	*but warm and pleaſant*	neck	2	8	9	24
12	F	5 Sunday after Eaſter	thro.	2	37	10	20
13	M	☉ eclips'd inviſible Q. P. 4 Ret.	arms	☽ Sets		11	23
14	T	*and (perhaps)* Pr. FR. bo. 13.	ſho.	8 A	56	0 A	28
15	W	Rogation Week	brea.	9	55	1	30
16	T	Holy Thurſd. CHRIST's Aſcenſ.	ſtom	10	43	2	33
17	F	Craſt. Aſc. 5 Ret.	heart	11	20	3	31
18	S	*ſome Claps of Thunder.*	back	11	45	4	24
19	F	6 Sun. after Eaſter, Exaudi	bow	Morn.		5	10
20	M	Term ends	and	0	5	5	56
21	T	Days inc. and Ni. ſho. 8h. 41m	belly	0	24	6	40
22	W	*Fine, pleaſant, and ſeaſonable.*	reins	0	37	7	22
23	T	**Ox.** and **Cam.** Eaſt. Terms end	loins	0	56	8	5
24	F	Prince GEORGE born	ſecr.	1	15	8	47
25	S	☉ Amplitude 39° 50′ at Riſing	and	1	37	9	32
26	F	Whit Sunday, Deſ. of H. Ghoſt	blad.	2	0	10	19
27	M	Whit Monday	thig.	2	30	11	7
28	T	Whit Tueſday. Moon ecl. viſible	hips	☽ Riſes		11	55
29	W	K. Charl. II. Reſt. Ember Week	kne.	8 A	36	Morn.	
30	T	Prs. AMEL. and CAROL. born	and	9	24	0	45
31	F	Day 16 ho. 18 min. long	ham	9	55	1	34

M D	Sun Riſes.		Sun Sets.		Day Breaks	Sun's Decl.		Watch too ſlow.	
6	4	15	7	45	0 58	19 N	21	4	9
12	4	8	7	52	No	20	36	3	49
18	4	1	8	0	real	21	40	3	11
24	3	55	8	5	Night.	22	28	2	19
31	3	51	8	9		23	7	1	3

JUNE hath xxx Days.

Laſt Quarter 5 Day a quarter paſt 5 Morning.
New Moon 11 Day at 7 at Night.
Firſt Quarter 19 Day half Hour after 12 Morning.
Full Moon 27 Day at 3 qu. paſt 3 Morning.

1		*This Month is likely*	legs	10 A	21	2 M	33
2		Trinity Sunday	and	10	45	3	10
3	M	Day 16 h. 26 m. long [Cr. Tri.	ankl.	11	7	3	57
4	T	*to begin with Fair Weather*	feet	11	25	4	44
5	W	*but perhaps cool for the*	toes	11	45	5	31
6	T	*Seaſon, and briſk*	head	Morn.		6	20
7	F	Trinity Term begins	face	0	6	7	10
8	S	*Gales of Wind.*	neck	0	30	8	3
9		1 Sunday after Trin. [Oct. Tr.	thro.	1	0	9	0
10	M	☉ in ♋ 56 min. paſt 9 at Nigh	arms	1	40	10	1
11	T	S. BARNABAS. K. GEO. II. Ina	ſhou.	2	35	11	2
12	W	The greateſt Increaſe of Days at	brea.	☽ Sets		0 A	9
13	T	LONDON is 8 ho. 59 minutes.	ſtom	9 A	6	1	8
14	F	at NOTTINGHAM 9h. 24min.	heart	9	37	2	4
15	S	K. GEO. II. proclaim'd 1727	and	10	4	2	56
16		2 Sunday after Trinity	*mind*	10	22	3	43
17	M	Quind. Trin. 3 return	bow	10	40	4	29
18	T	*Windy and ſomewhat*	belly	10	58	5	13
19	W	*inclined to Wind, about*	reins	11	17	5	57
20	T	*this Time, and perhaps*	loins	11	37	6	39
21	F	☉ due E. 7h. 15′. Alt. 29°. 28′	ſecr.	11	58	7	23
22	S	*ſome Thunder, &c.*	*pizle*	Morn.		8	9
23		3 Sunday after Trinity	blad.	0	26	8	36
24	M	S. JOHN Bapt. Midſummer-day	thig.	1	0	9	45
25	T	[Tres Trin. 4 ret.	hips	1	41	10	34
26	W	Trinity Term ends	kne.	2	34	11	24
27	T	*Hot and ſultry, but*	and	☽ Riſes		Morn.	
28	F	*not without Thunder Showers.*	ham	8 A	22	0	15
29	S	St. PETER and St. PAUL	legs	8	45	1	2
30		4 Sunday after Trinity	ankl.	9	10	1	50

M D	Sun Riſes.		Sun Sets.		Day break.	Sun's Decl.		Watch too faſt.	
6	3	39	8	21	No real light.	23 N	26	0	20
12	3	39	8	21		23	28	1	37
18	3	40	8	20		23	15	2	53
24	3	44	8	16		22	47	3	59
30	3	49	8	11		22	5	4	53

JULY hath XXXI Days.

Laſt Quarter 4 Day at 11 in the Morning.
New Moon 11 Day half h. paſt 4 Morning.
Firſt Quarter 18 Day half ho. paſt 4 Afternoon.
Full Moon 26 Day at 4 Afternoon.

1	M	*Flying Showers with briſk Winds*	feet	9 A	28	2 M	37
2	T	Days decreas'd 27 min.	toes	9	46	3	25
3	W	Days 16 h. 16 min. long	head	10	6	4	12
4	T	☉ due Eaſt 7h. 9′. Alt. 27° 20′	face	10	30	5	0
5	F	*Hot and ſultry, probably*	neck	10	57	5	50
6	S	*follow'd with much*	thro	11	31	6	46
7	F	5 S. aft. Trin. **Tho. a Becket**	*whiſtl*	Morn.		7	44
8	M	*Thunder and ſudden*	arms	0	19	8	44
9	T	☉ Amplitude 35° 56′ North	ſho	1	15	9	45
10	W	*Showers of Rain.*	brea	2	22	10	45
11	T	Days ſhorten'd 46 min.	ſton	☽	Sets	11	44
12	F	*Now expect the Weather to be*	hear	7 A	58	0 A	40
13	S	*more pleaſant and ſeaſonable.*	back	8	22	1	30
14	F	6 Sunday after Trinity	bow	8	42	2	18
15	M	**Swithin**	belly	9	0	3	4
16	T	☉ Ampl. 33° 10′	reins	9	30	3	50
17	W	Days decreaſed, and Nights	and	9	44	4	33
18	T	increas'd 1 h. 3 min.	loin	10	6	5	16
19	F	*Still, and to the End, expect*	ſecr.	10	25	6	1
20	S	Dog-days begin	and	10	56	6	49
21	F	7 Sunday after Trinity	blad	11	36	7	37
22	M	**Mary Magdalen**	thig	Morn.		8	26
23	T	☉ due E. 6.h. 55 m. Alt 22°.4′	hips	0	25	9	16
24	W	Days 15 ho. 24 min. long	kne	1	22	10	6
25	T	St. JAMES the Apoſtle	ham	2	24	10	56
26	F	☉ Amplitude 28° 31′	legs	3	31	11	44
27	S	*good Weather for the Harveſt.*	ank	☽	Riſes	Morn.	
28	F	8 Sunday after Trinity	fee	7 A	35	0	32
29	M	Sun riſes half an hour paſt 4,	toes	7	55	1	21
30	T	ſets half an hour paſt 7	*corn*	8	15	2	10
31	W	Princeſs AUGUSTA born	he	8	38	3	0

M D	Sun Riſes.		Sun Sets.		Day Breaks.		Sun's Decl.		Watch too faſt.	
6	3	56	8	4	No real		21 N	10	5	33
12	4	3	7	57	Night		20	0	5	55
18	4	12	7	47	0	21	18	40	5	58
24	4	22	7	37	1	15	17	10	5	32
31	4	35	7	25	1	44	15	9	4	40

AUGUST hath xxxi Days.

Laſt Quarter 2 Day at 3 in the Afternoon.
New Moon the 9 Day at 2 in the Afternoon.
Firſt Quarter 17 Day half ho. paſt 10 in the Morning.
Full Moon 25 Day at 3 in the Morning.
Laſt Quarter 31 Day at 10 at Night.

1	T	**Lammas Day**	face	9	A 4	3	M50
2	F	*Cloudy at*	neck	9	37	4	43
3	S	*the beginning*	thro.	10	18	5	40
4	F	9 Sunday after Trinity	arms	11	10	6	38
5	M	*but not much Wet.*	ſhou.	Morn.		7	38
6	T	Days decreaſed 2 ho. 13 min.	brea.	0	11	8	37
7	W	Days 14 hours 20 min. long	ſtom	1	24	9	34
8	T	☉ Amplitude 20	heart	2	42	10	30
9	F	☉ due E 6 h. 30 min.	back	4	3	11	21
10	S	**Laurence**	bel.y	☽ Sets		0	A12
11	F	10 Sunday after Trinity	and	7	10	1	0
12	M	Days are now decreas'd and	*guts*	7	26	1	45
13	T	Nights lengthen'd 2h. 42 m.	reins	7	48	2	30
14	W	Days 14 hours long	loins	8	10	3	15
15	T	**Aſſump. B. M.**	ſecr.	8	30	4	0
16	F	*Expect good Weather*	*cods*	9	2	4	47
17	S	☉ Amplitude 17°. 44′	*pizzl*	9	39	5	35
18	F	11 Sunday after Trinity	hips	10	21	6	23
19	M	*for the Harveſt.*	thig.	11	15	7	12
20	T	Sun riſes 12 min. paſt 5, and	kne.	Morn.		8	3
21	W	ſets 48 min. paſt 6	ham.	0	16	8	52
22	T	Sun's Amplitude 14°	legs	1	24	9	40
23	F	*Windy, and not much Downfall*	and	2	37	10	30
24	S	**St. BARTHOLOMEW**	ankl.	3	53	11	20
25	F	12 Sunday after Trinity	feet	☽ Riſes		Morn.	
26	M	Days now decreas'd 3 h. 12m.	toes	6	A 21	0	9
27	T	**Dog Days end**	head	6	47	1	0
28	W	☉ due E. 6h. 15m. Alt. 6°. 25′	face	7	15	1	51
29	T	*ſtill windy, but (hope)*	neck	7	46	2	45
30	F	*not much wet.*	thro.	8	24	3	41
31	S	Day 12 ho. 50 min. long	arms	9	12	4	40

M D	Sun Riſes.		Sun Sets.		Day Breaks.		Sun's Declin.		Watch too faſt.	
6	4	45	7	15	2	7	13 N	29	3	40
12	4	57	7	3	2	27	11	30	2	10
18	5	8	6	52	2	47	9	24	0	38
24	5	20	6	40	3	6	7	12	1 ſlow	14
31	5	35	6	25	3	25	4	36	3	34

SEPTEMBER hath xxx Days.

New Moon 8 Day 3 qu. past 2 in the Morning.
First Quarter 16 Day half ho past 5 Morning.
Full Moon 23 Day half ho. past 1 Afternoon.
Last Quarter 30 Day at 5 in the Morning.

1	F	13 Sunday after Trinity	sho.	10 A 13	5 M 40
2	M	London burnt 1666	brea.	11 21	6 39
3	T	☉ due E. 6h. 11 min. Alt 4°. 37	ſtom	Morn.	7 37
4	W	Day 12h. 34 min. long	heart	0 37	8 35
5	T	*Still expect a good Time for*	back	1 54	9 24
6	F	Days are now decreas'd, and	bow	3 0	10 13
7	S	Nights increas'd 4h. 46 min.	belly	4 24	11 0
8	F	14 Sunday after Trinity	*gutts*	☽ Sets	11 45
9	M	*the Harveſt ; but ſoon inclin'd*	reins	6 A 2	0 A 32
10	T	*to much wet, with rough Winds.*	loins	6 20	1 15
11	W	Equal Day and Night in all the	ſecr.	6 45	2 3
12	T	☉ in ♎ a quarter before Noon	blad	7 15	2 50
13	F	habitable Parts of the Earth	hips	7 48	3 37
14	S	**Holy Rood Day**	thig	8 26	4 26
15	F	15 Sunday after Trinity	kne	9 14	5 15
16	M	☉ Amplitude 2° South	and	10 12	6 4
17	T	Day 11 h. 30 min. long	ham	11 16	6 52
18	W	Ember Week	legs	Morn.	7 41
19	T	*Now expect the weather to be*	feet	0 24	8 30
20	F	*tolerably good for the Seaſon.*	ankl.	1 35	9 18
21	S	S. Matt. Ev. **Notting. Fair**	toes	2 42	10 7
22	F	16 Sunday after Trinity	head	4 8	10 57
23	M	Sun riſes 23 min. paſt 6	face	☽ Riſes	11 49
24	T	*Now and to the*	neck	5 A 26	Morn.
25	W	Days decreaſed and Nights in-	thro	5 55	0 42
26	T	creaſed 5 h. 37 min.	arms	6 30	1 40
27	F	*End, a fine Seaſon*	ſho	7 19	2 40
28	S	*may well be expected.*	brea.	8 15	3 41
29	F	17 S. aft. Trin. St. Michael	and	9 24	4 42
30	M	Day 10 ho. 46 min. long	ſtom	10 37	5 41

M D	Sun Riſes.	Sun Sets.	Day Breaks	Sun's Declin.	Watch too ſlow
6	5 47	6 13	3 40	2 N 17	5 40
12	6 0	6 0	3 57	0 0	7 42
18	6 13	5 47	4 10	2 S 25	9 42
24	6 25	5 35	4 25	4 45	11 53
30	6 37	5 23	4 36	7 3	13 11

OCTOBER hath XXXI Days.

New Moon 7 Day at 6 at Night.
Firſt Quarter 15 Day at 11 at Night.
Full Moon 23 half ho. paſt 11 at Night.
Laſt Quarter 29 Day half ho. paſt 3 Afternoon.

1	T	*We may expect the*	heart	11 A	52	0 M	36
2	W	*beginning of Winter*	and	Morn.		7	28
3	T	*to be now, or ſome*	back	1	6	8	17
4	F	*Time before the End*	bow	2	21	9	4
5	S	*of this Month.*	belly	3	36	9	50
6	F	18 Sunday after Trinity	*gutts*	4	47	10	35
7	M	Days 10 hours 19 min.	reins	6	0	11	19
8	T	Nights 13 ho. 41 min. long	loins	☽ Sets		0 A	5
9	W	**Dionyſius**	ſecr.	5 A	25	0	52
10	T	**Oxf.** and **Camb.** Terms begin	*piſsle*	5	55	1	39
11	F	King George II. Crowned	blad.	6	30	2	26
12	S	Days 9 ho. 53 min. long	thig.	7	15	3	15
13	F	19 Sunday after Trinity	hips	8	9	4	4
14	W	*However, we'll hope*	kne.	9	10	4	50
15	T	Sun riſes 8 min. paſt 7	ham	10	15	5	39
16	W	ſets 50 min. paſt 4	legs	11	25	6	25
17	T	*for a good Seed Time.*	ank.	Morn.		7	13
18	F	St. LUKE the Evangeliſt	feet	0	38	8	0
19	S	Days 9 h. 28 min. long	toes	1	54	8	50
20	F	20 Sunday after Trinity	*corns*	3	10	9	38
21	M	Tres Mich. 1 Return	head	4	28	10	39
22	T	Princeſs of ORANGE born	face	6	0	11	27
23	W	Term begins	neck	☽ Riſes		Morn.	
24	T	*Perhaps now, windy*	thro.	5 A	14	0	28
25	F	**Criſpin**	arms	6	8	1	30
26	S	*but expect ſome*	ſhou	7	15	2	30
27	F	21 Sunday after Trinity	brea.	8	26	3	30
28	M	St SIMON and St JUDE Apoſtles	ſtom	9	45	4	30
29	T	Menſ. Mich. 2 Return	heart	10	56	5	26
30	W	K. GEORGE II. born 1683	back	Morn.		6	15
31	T	*Froſty Mornings.*	bow	0	15	7	4

M. D.	Sun Riſes.		Sun Sets.		Day Breaks		Sun's Decl.		Watch too ſlow	
6	6	50	5	10	4	50	9 S	18	14	35
12	7	2	4	58	5	0	11	26	15	34
18	7	14	4	46	5	11	13	30	16	7
24	7	26	4	34	5	22	15	26	16	13
30	7	37	4	23	5	33	17	30	15	44

NOVEMBER hath xxx Days.

New Moon 6 Day at half ho. paſt 1 Afternoon.
Firſt Quarter 14 Day at 1 Afternoon.
Full Moon 21 Day at 10 in the Morning.
Laſt Quarter 28 Day near 5 in the Morning.

1	F	All Saints	belly	1	M29	7	M50
2	S	**All Souls**	*guts*	2	37	8	34
3	F	22 Sunday after Trinity	reins	3	46	9	17
4	M	3 Return	loins	4	55	10	0
5	T	Gun Powder Treaſon 1605	ſecr.	6	0	10	45
6	W	Sun eclipſ'd inviſible	blad.	☽	Sets	11	32
7	T	Day 8 hours and 1 qu. long	hips	4	A30	0	A20
8	F	*Bad Weather is more*	and	5	12	1	10
9	S	*likely to be expected now;*	thig	6	2	1	58
10	F	23 Sunday after Trinity	kne.	7	0	2	46
11	M	**Martin** Bp. of Tours	ham	8	3	3	53
12	T	Craſt. Mart. 4 Return	legs	9	15	4	19
13	W	*than it can be (expected)*	ankl	10	20	5	5
14	T	Prince WILLIAM HENRY born	feet	11	30	5	50
15	F	*that* Every body *has*	toes	Morn.		6	38
16	S	*provided against the worſt.*	*corns*	0	43	7	30
17	F	24 Sunday after Trinity	head	2	0	8	12
18	M	Octab. Mart. 5 Ret.	face	3	16	9	5
19	T	Princeſs of WALES born	neck	4	37	10	0
20	W	Days decreas'd 9 ho. 4 min.	thro.	6	0	11	0
21	T	Moon eclipſ'd viſible	arms	Riſes		Morn.	
22	F	*Winds with Rain*	ſho.	4	A44	0	4
23	S	**Clement**	brea.	5	55	1	7
24	F	25 Sunday after Trinity	ſtom	7	13	2	9
25	M	Quin. Mar. 6 Return	heart	8	34	3	47
26	T	*Snow or Sleet*	back	9	57	4	2
27	W	Day 7 hours and half long	bow.	11	5	4	51
28	T	Term ends	*panch*	Morn.		5	38
29	F	*at the End.*	belly	0	18	6	24
30	S	St. ANDREW Apoſtle	reins	1	27	7	7

M D	Sun Riſes.		Sun Sets.		Day Breaks.		Sun's Declin.		Watch too ſlow	
6	7	47	4	13	5	40	19 S	3	14	36
12	7	55	4	5	5	46	20	24	13	15
18	8	2	3	58	5	52	21	32	11	28
24	8	7	3	53	5	58	22	26	8	56
30	8	13	3	47	6	0	23	3	6	15

DECEMBER hath XXXI Days.

New Moon the 6 Day at 8 in the Morning.
First Quarter 14 half ho. paſt 5 in the Morning.
Full Moon 20 Day at 8 at Night.
Laſt Quarter 27 half ho. paſt 9 at Night.

1	F	**Advent Sunday**	loins	2	M34	7	M50
2	M	The Sun's greateſt Amplitude	ſecr.	3	42	8	35
3	T	at LONDON is 39° 50′	and	4	50	9	21
4	W	at NOTTINGHAM 41° 28′	blad.	5	50	10	6
5	T	Shorteſt Day at LOND. 7h. 35m.	hips	6	50	10	54
6	F	at NOTTINGHAM 7h. 18min.	thig	☽	Sets	11	43
7	S	**Princeſs of DENMARK born**	kne	4	A42	0	A31
8	F	2 Sunday in Advent	and	5	44	1	18
9	M	The greateſt ſhortning of Days	ham	6	49	2	6
10	T	at LONDON is 8 h. 50 min.	legs	7	57	2	50
11	W	Sun in ♑ 50 min. paſt 2 Morn.	ankl.	9	6	3	36
12	T	The greateſt ſhortening	feet	10	18	4	12
13	F	**Lucy**	toes	11	30	5	6
14	S	at NOTTINGHAM 9h. 24m.	*corns*	Morn.		5	54
15	F	**3 Sunday in Advent**	*horns*	0	50	6	42
16	M	**Oxf.** and **Cam.** Terms end	head	2	2	7	34
17	T	Days 7 ho. 21 min. long	face	3	18	8	30
18	W	**Ember Week**	neck	4	39	9	31
19	T	*Froſt and Snow*	thro.	5	55	10	33
20	F	*may well be now*	arms	7	50	11	35
21	S	St. THOMAS the Apoſtle	ſho.	☽	Riſes	Morn.	
22	F	4 Sunday in Advent	brea	5	A 51	0	36
23	M	*expected, as being the moſt*	ſtom	7	10	1	34
24	T	*ſeaſonable about this Time.*	hear	8	32	2	27
25	W	CHRISTMAS Day	back	9	47	3	18
26	T	St. STEPHEN Proto-Martyr	bow	11	0	4	4
27	F	St. JOHN Evangeliſt	belly	Morn.		4	50
28	S	Innocents, or Herod's Murd. Inf.	reins	0	15	5	34
29	F	1 Sunday after Chriſtmas	loins	1	19	6	19
30	M	Princeſs ELIZABETH born	ſecr.	2	24	7	4
31	T	Days 7 ho. 44 min. long	blad.	3	28	7	50

M D	Sun Riſes.		Sun Sets.		Day breaks		Sun's Decl.		Watch too ſlow	
6	8	12	3	48	6	1	23 S	24	3	22
12	8	13	3	47	6	0	23	28	0	12
18	8	11	3	49	6	1	23	16	2 fa.	10
24	8	8	3	52	5	59	22	52	5	30
31	8	3	3	57	5	53	22	51	8	30

A TABLE of all the Kings and Queens of *England* ſince the Conqueſt.

The Year of the Birth of each King and Queen; alſo the Year, Month, and Day, whereon they began to reign: beginning the Year the firſt Day of January, 1751.					The Length of each Reign.			The Year expired ſince each Reign began and ended.	
Names.	Born.	Began to Reign.			Y.	M.	D.	Beg	End
William Conq.	1027	1066	October	14	20	10	26	685	664
William Rufus	1057	1087	Septem.	9	12	10	24	664	651
Henry I.	1058	1100	Auguſt	2	35	4	0	651	616
Stephen	1105	1135	Decem.	1	18	10	24	616	597
Henry II.	1134	1154	October	25	34	8	11	597	562
Richard I.	1156	1189	July	6	9	9	0	562	552
John	1166	1199	April	6	17	6	13	552	535
Henry III.	1207	1216	October	19	56	1	0	535	479
Edward I.	1239	1272	Novem.	16	34	7	21	479	444
Edward II.	1284	1307	July	7	19	6	13	444	424
Edward III.	1312	1327	January	20	50	5	1	424	374
Richard II.	1366	1377	June	21	22	3	8	374	352
Henry IV.	1367	1399	Septem.	29	13	5	21	352	338
Henry V.	1389	1413	March	20	9	5	11	338	329
Henry VI.	1421	1422	Auguſt	31	38	6	4	329	290
Edward IV.	1442	1461	March	4	22	1	5	290	268
Edward V.	1471	1483	April	9	0	2	13	268	268
Richard III.	1443	1483	June	22	2	2	0	268	266
Henry VII.	1457	1485	Auguſt	22	23	8	0	266	242
Henry VIII.	1492	1509	April	22	37	9	6	242	204
Edward VI.	1537	1547	January	28	6	5	8	204	198
Mary I.	1516	1553	July	6	5	4	11	198	193
Elizabeth	1533	1558	Novem.	17	44	4	7	193	148
James I.	1566	1603	March	24	22	0	3	148	126
Charles I.	1600	1625	March	27	23	10	3	126	102
Charles II.	1630	1649	January	30	36	0	7	102	66
James II.	1633	1685	February	6	4	0	7	66	62
Mary II.	1662	1689	Feb.	13	5	10	15	62	57
William III.	1650				13	0	23	62	49
Anne	1665	1702	March	8	12	4	24	49	37
George I.	1660	1714	Auguſt	1	12	10	10	37	24
George II.	1683	1727	June	11	whom God preſerve.				

A Compendious TABLE of INTEREST,

Shewing the Intereſt of any Sum of Money, from a Millio to a Pound; for any Number of Days, at any Rate o Intereſt.

N°.	l.	s.	d.	q.		N°.	l.	s.	d.	q.	
1000000—	2739	14	6	0	,99	1000—	2	14	9	2	,14
900000—	2465	15	0	3	,29	900—	2	9	3	3	,12
800000—	2191	15	7	1	,59	800—	2	3	10	0	,11
700000—	1917	16	1	3	,89	700—	1	18	4	1	,10
600000—	1643	16	8	2	,19	600—	1	12	10	2	,80
500000—	1369	17	3	0	,49	500—	1	7	5	3	,70
400000—	1095	17	9	2	,79	400—	1	1	11	0	,50
300000—	821	18	4	1	,09	300—	0	16	5	1	,40
200000—	547	18	10	3	,40	200—	0	10	11	2	,30
100000—	273	19	5	1	,70	100—	0	5	5	3	,01
90000—	246	11	6	0	,32	90—	0	4	11	0	,71
80000—	219	3	6	0	,96	80—	0	4	4	2	,41
70000—	191	15	7	1	,59	70—	0	3	10	0	,11
60000—	164	7	8	0	,22	60—	0	3	3	1	,81
50000—	136	19	8	2	,85	50—	0	2	8	3	,51
40000—	109	11	9	1	,48	40—	0	2	2	1	,21
30000—	84	3	10	0	,11	30—	0	1	7	0	,90
20000—	54	15	10	2	,74	20—	0	1	1	2	,60
10000—	27	7	11	1	,37	10—	0.	0	6	2	,30
9000—	24	13	1	3	,23	9—	0	0	5	3	,67
8000—	21	18	4	1	,10	8—	0	0	5	1	,40
7000—	19	3	6	2	,96	7—	0	0	4	2	,41
6000—	16	8	9	0	,82	6—	0	0	3	3	,76
5000—	13	13	11	2	,58	5—	0	0	3	1	,15
4000—	10	19	2	0	,55	4—	0	0	2	2	,52
3000—	8	4	4	2	,41	3—	0	0	1	3	,80
2000—	5	9	7	0	,27	2—	0	0	1	1	,26
1000—	2	14	9	2	,14	1—	0	0	0	2	,63

RULE.

Multiply the Sum by the Number of Days; and that Product by the Rate per Cent. Then cut off the two laſt Figures to the right Hand, and the reſt you muſt find in the Table.

Example, What is the Intereſt of 100 l. for 365 Days at 5 per Cent

N°. of Days 365
multiply by 100
Product 36500
multiply by 5 Rate p. Cent.
825|00

Then in the Table
againſt 1000 is 2 14 9 2 ,14
800 2 3 10 0 ,11
20 0 1 1 0 ,60
5 0 0 3 1 ,15
Anſw. 5 0 0 0 0 ,00

Of the Eclipſes in the Year 1751.

WITHIN the Compaſs of this Year
But Two Eclipſes will appear;
Altho' in Number there are Four,
Two only will be ſeen, no more.
None of the Sun this Year you'll ſee:
The Moon ſhall twice in Darkneſs be;
The Times of which, if you would know,
And Quantities, pray ſee below.

Mr *Abr. Lord* obſerves, that the firſt is of the Sun, *May* 13, inviſible to the Inhabitants of this Part of the Globe.

The ſecond is of the Moon, *May* 28, at Midnight, viſible. See the Table.

The third is of the Sun, *Nov.* 6, inviſible to us.

The fourth and laſt is of the Moon, *Nov.* 21, viſible.

The *Times*, *Places*, *&c.* of the Moon's Eclipſe *May* 28, from ſeveral of our worthy Contributors, is expreſs'd in the following TABLE.

		Beg.		Mid.		End		Dur.		Digits	
		h.	m.	h.	m.	h.	m.	h.	m.	°	′
Mr William Sutton,	Lond P. M.	11	47	1	30	3	12	3	24	10	47
Mr. Edw. Greenſted	London	11	59	1	40	3	21	3	22	10	43
	Maidſtone	12	1	1	42	3	23				
Mr John Skay	Long Compton	11	47	1	30	3	3	3	16	10	18
	Naples	12	52	2	30	4	8				
	Dantzick	1	8	2	46	4	24				
Mr Tho. Harbidge,	London	11	52	1	30	3	8	3	16	10	18
Mr John Hollingworth,	London	1	22	1	58	2	33	1	11	10	46
Mr Ab. Lord, *May* 29,	Peckleton	0	47	2	25	4	4	3	17	9	34
Mr Sam. Sector	London *May* 28	11	59	13	40	15	22			10	52
Mr Ch. Maſon Jun.	London	11	47	1	30	3	12	3	24	10	48
	Sapperton	11	39	1	21	3	3				
	Barbadoes	7	54	9	37	11	19				
Mr Will^m Wadham,	North Curry	11	35	1	18	3	0	3	24	10	49
Mr Th. Allen, Leadbetter	Lond.	11	47	13	30	15	12	3	24	10	48
Mr Th. Allen, Brent	Lond.	11	58	13	38	15	18	3	20	10	20
Mr W. Whalhead,	Long Collingham	12	12	13	51	15	31	3	19	10	18
Mr Benj. Donn	London	11	52	1	30	3	8	3	17	10	14
	Bideford	11	34	1	13	2	57				
Mr John Ramſay	London	11	48	13	30	15	12	3	24	10	6
	Hanover	12	36	14	10	15	52				
	Little Harle	11	40	13	22	15	4				
	Madrid	11	27	13	9	14	51				
Mr John Randles	London	12	21	2	3	3	44	3	23	10	32
	Barbadoes	8	28	10	10	11	51				
	Wem	12	11	1	53	3	34				
Mr John Williams Jun.	Mold	0	6	1	44	3	22	3	16	10	24

Alſo the *Times*, *Places*, *&c.* of the Moon's Eclipſe, on the 21ſt day of *November*, from the ſame Hands, are exhibited in the following TABLE.

November 21, 1751. P. M.		Beg. h. m.	Mid. h. m.	End. h. m.	Dur. h. m.	Dig. ° ′
Mr W. Sutton *per Leadbetter* Lond.		8 30	9 52	11 14		8 27
Mr Edw. Greenſted	London	8 29	9 51	11 13	2 44	8 29
	Maidſtone	8 31	9 53	11 15		
Mr John Skay, London		8 29	9 50	11 12	2 44	8 21
Mr T. Harbidge	Row'rightcomes	7 24	9 45	12 7	4 43	8 21
	Hanover	8 9	10 30	12 52		
	Warſaw	8 56	11 17	1 39		
Mr John Hollingworth, London		9 14	9 58	10 42	1 28	8 33
Mr Ab. *Leadbetter*	Peckleton	7 48	9 9	10 30	2 42	8 45
Lord *Shackerly*		7 50	9 14	10 38	2 48	8 58
Mr Sam. Sector, London		8 14	9 41	11 8		8 51
Mr Ch. Maſon Jun.	London	8 29	9 51	11 12	2 43	8 29
	Sapperton	8 21	9 42	11 4		
	Alexandria	10 32	11 54	1 15		
Mr Will. Wadham, North Curry		8 17	9 39	11 1	2 43	8 46
Mr W. Whalhead, Long Collingham		8 10	9 35	10 59	2 48	8 46
Mr Benj. Donn	London	8 29	9 51	11 13	2 44	8 30
	Bideford	8 11	9 33	10 55		
Mr John Ramſay	London	8 28	9 50	11 12		
	Edinburgh	8 16	9 38	11 0		
	Morpeth	8 21	9 43	11 5		
	Amſterdam	8 50	10 11	11 33		
Mr John Randles	London	8 30	9 52	11 14	2 44	8 21
	Peterſburgh	11 6	12 28	1 50		
	Liſbon	7 53	9 15	10 37		
	Wem	8 20	9 42	11 4		
Mr John Williams Jun. Mold		8 14	9 35	10 56	2 42	8 20

As to the firſt Eclipſe of the Sun, our ingenious Contributor Mr. *Abr. Lord* takes notice, that, tho' it be inviſible here, yet the Sun will be firſt ſeen eclips'd on his vertical Point at his riſing in the North Eaſtern Parts of *Muſcovite Tartary*, Lat. 63° 22′ Lon. 110° 44′ Eaſt of *London*. The Centre of the Penumbra enters the Earth's Diſk, and the Sun is ſeen totally eclips'd at his riſing, near the River *Wolga* in *Siberia*, Lat. 52° 25′ Lon. 53° 24′ Eaſt of *London*, from whence it bends its Courſe North Eaſterly entirely thro' *Siberia* and *Muſcovite Tartary* to the *Icy Sea*, where the Meridian Sun will be ſeen centrally eclipſed in Lat. 84° 3′ Lon. 160° 31′ Eaſt of *London*. Then traverſing more South Eaſt, the Centre of the Penumbra quits the Earth's Diſk, and the Sun is laſt ſeen totally eclips'd at his ſetting in the North Parts of *Hudſon's Bay*, Lat. 66° Lon. 272° Eaſt of *London*: and the whole Penumbra quits the Diſk in the unknown Parts of *America* in Lat. 28° 36′ and Lon. 125° 26′ Weſt of London.

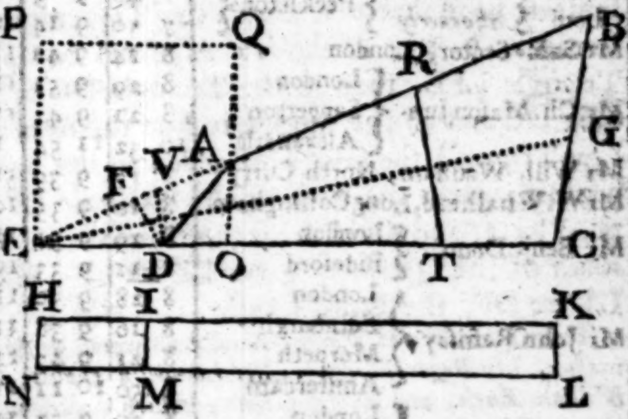
He likewiſe obſerves, that the *Moon* will make ſeveral Appulſes to the South Arm of the *Crab*, of the third Mag. and will croſs over it *Nov.* 25. Immerſion at 11h. 36 min. neareſt Approach of their Centres 11h. 58 min. Emerſion at 12h. 15 min. Duration 39 min.

Anſwers to the Mathematical Queſtions in 1750.

(I) Queſtion 91 conſtructed and anſwered by Mr *Abr. Lord.*

CONSTRUCTION. Let the given Trapezium be ABCD; produce the Sides BA and CD, till they meet in E. Then biſect the Angle BEC by the Line EG, and let fall the Perp. DF; then (by 45 *Eu.* 1.) make the Rectangle JKLM = half the given Trapezium, and of the Breadth DF, join the Rectangle HM to it = the Triangle AED, then upon EC make the Square EQ = the Rectangle HL; then make the Iſoſceles Triangle ERT = the Square EQ and the Line RT will be the Line required.

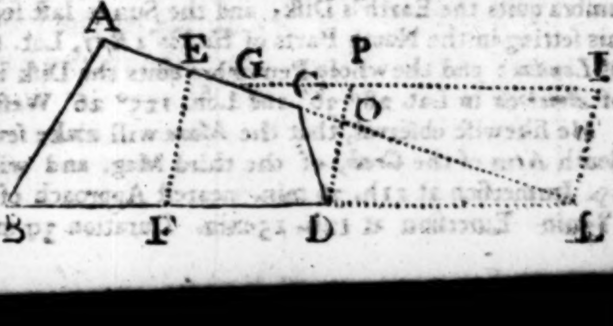
DEMONSTRATION. Seeing that the Triangle ERT is = the Square EQ, or the Rectangle HL; and ſince the Rectangle HL is = half the Trapezium ABCD, + the Triang. EAD; therefore taking the Triangle EAD from both, there remains the Trapezium ADRT = half the Trapezium ABCD. and ſince the Angles at R and T are equal, the Line RT is the ſhorteſt poſſible. Q. E. D.



CALCULATION. In the Triangle AED, by having all the Angles and the Side AD, we may find the Area and other Sides; then add the Area of the Triangle to the Area of the Rectangle. and reſerve the Sum: Draw DV parallel to RT; then by the given Angles, and the Side ED we may find Area of the Triangle EDV; Then EDV : $\overline{ED}^2$ :: ERT : $\overline{ET}^2$; from the Square Roots of which ſubſtract ED, and the Remainder is ED.

The ſame anſwer'd by Mr *Tho. Garrard.*

Let ABCD be the given Trapezium, and let AC and BD be produc'd to L; then upon L make the Parallelogram DPIL = the Triangle DCL + half the given Trapezium, and making the



Angle LDO = LOD, produce IP to meet AL in G; then take EL a mean proportional between PI and 2GL, and draw EF parallel to PD, ſo will EF be the Line required.

DEMONSTRATION. From the Similarity of Triangles, we have $\frac{1}{2}GL \times LI : \overline{GL}|^2 :: PI \times LI : \overline{EL}|^2 \therefore \overline{EL}|^2 = 2GL \times PI$. Therefore when the Triangle LEF = the Parallelogram PDLI, then EL will be a mean Proportional between 2GL and PI, and EF is the ſhorteſt Line poſſible (*per* Theor. 10. p. 112. of *Simpſon's* Geometry) *Q. E. D.*

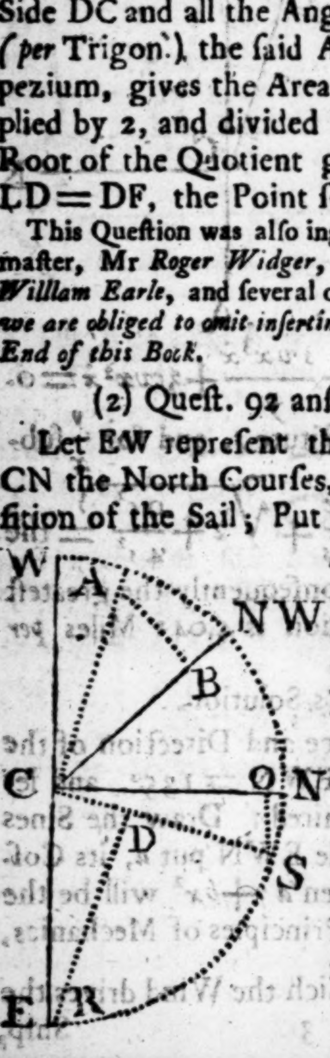
The ſame anſwered by Mr *Paul Sharp*.

Let ABDC be the Trapezium, in which draw EF making equal Angles with the Sides AC, BD; then will EF be the ſhorteſt Line that will divide the Trapezium as required (*per* Lemma, p. 374. *Simpſon's* Algebra) compleat the Iſoſceles Triangle LFE, then in the Triangle DCL, there is given the Side DC and all the Angles, to find the Area and Sides DL, CL (*per* Trigon.) the ſaid Area added to the half Area of the Trapezium, gives the Area of the Triangle LFE, which multiplied by 2, and divided by the Sine of the Angle L; the ſqu. Root of the Quotient gives LE = LF; Conſequently LF − LD = DF, the Point ſought.

This Queſtion was alſo ingeniouſly anſwered by Mr *R. Pritcher* School-maſter, Mr *Roger Widger*, Mr *Llewelin Davis*, Mr *S. Heartly*, Mr. *William Earle*, and ſeveral others; *which Solutions, for want of Room, we are obliged to omit inſerting at large, but refer to the Catalogue at the End of this Book.*

(2) Queſt. 92 anſwer'd by Mr *Thomas Garrard*.

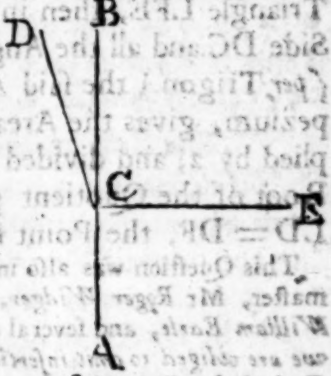
Let EW repreſent the Weſt, CNW the North-weſt, and CN the North Courſes, and CS the Width and required Poſition of the Sail; Put p for the Sine and Coſine of BCN = 45°, x and y the Sine and Co-ſine of SCE, and call CS (Radius) Unity. From S, let fall the Perpendicular SO, make CR = CO, and draw RD perpendicular to CS, then make CA equal and parallel to RD, and let fall the Perpendicular AB. Then will CO be as the Number of the Particles of Wind ſtriking againſt the Sail $= x$; and RD as the Force of thoſe Particles, in the Direction RD $= xx$. Alſo CB as that force in the Direction CB $= Px^3 + Px^2y$, which



which (by the Queſtion) is to be the greateſt poſſible. $\therefore x^3 + xxy = x^3 + xx\sqrt{1-xx})$ is a *Maximum*. In Fluxions $3x^2\dot{x} + \frac{2x^3\dot{x}-3x^5\dot{x}}{\sqrt{x^4-x^6}} = 0$, which brought out of Surds and reduc'd gives $x^4 - \frac{6}{7}x^2 = -\frac{4}{18}$ or $x^4 - 2bx^2 = -d$. Solv'd $x = \sqrt{\overline{bb-d}+b)} = .9627697$ = the Nat. Sine of 74° 19′ very near; and the Velocity is 4.197325 Miles *per* Hour.

The ſame anſwer'd by Mr *Benj. Donn*.

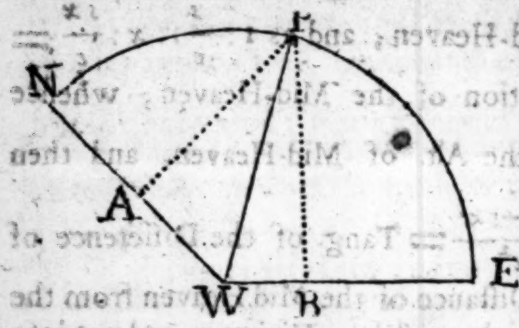
Let AB repreſent the Sail, EC the Direction of the Wind, CD the North-weſt Direction of the Ship. Let s and $-c$ = the Sine and Coſine of the Angle ECD, x and y = the Sine and Coſine of the Angle ECB; put alſo v for the Force of the Wind acting on a Sail that is perpendicular to its Direction; then $\overline{1}^2 : v :: x^2 : vx^2$ = the Force of the Wind on the Sail AB; Again, $1 : vx^2 :: sy + cx$ (the Sine of the Angle BCD) $: syvx^2 + cvx^3$ = the Velocity in the Direction CD which muſt be a *Maximum*, $\therefore$ in Fluxions $2svx\dot{x}y + svx^2\dot{y} + 3cvx^2\dot{x} = 0$. But by 47 *Euc.* 1. $x^2 + y^2 = 1$; which in Fluxions $2x\dot{x} + 2y\dot{y} = 0$. $\therefore \dot{y} = \frac{-x\dot{x}}{y}$



this ſubſtituted for $\dot{y}$ gives $2svx\dot{x}y - \frac{svx^3\dot{x}}{y} + 3cvx^2\dot{x} = 0$. Reduc'd $s\frac{x}{y} - 2s - \frac{y}{x} = 3c$. For $\frac{x}{y}$ ſubſtitute t, and for $\frac{y}{x}$ ſubſtitute $\frac{1}{t}$, then $st - \frac{2s}{t} = 3c \therefore t = \frac{3c}{2s} + \sqrt{2 + \frac{9c^2}{4s^2}}$ = the Tang. of the Angle ECB = 74° 19′. Conſequently the greateſt Velocity poſſible in the given Direction is 4.041 Miles *per* Hour.

Mr *Abr. Lord* the Propoſer's Solution.

Let the Line EW repreſent the Force and Direction of the Wind, WN the Courſe, the Angle EWN = 135°, and let PW be the Direction of the Sail required: Draw the Sines PA and PB; For the Sine of the Angle EWN put a, its Coſ. b. Sine NWP put x^2, its Coſine y, then $ay + bx^2$ will be the Sine of the Angle EWP, and by the Principles of Mechanics, $\overline{PB}^2 \times \frac{PA}{WP}$ will be the Force by which the Wind drives the Ship,



Ship, in the Direction WN; but as in this Caſe, the Motion of the Ship bears no ſenſible Proportion to the Velocity of the Wind, therefore the Velocity of the Ship will be as $ayx+bx^3$, which Expreſſion muſt be a *Maximum*; for y ſubſtitute its Value $\overline{1-x^4}|^{\frac{1}{2}}$. which Value ſubſt. in the above Expreſſion and $\overline{a^2x^2-a^2x^6}|^{\frac{1}{2}}+bx^3$ will be a *Maximum* in Fluxions, and reduced gives the Value of $x^2 = .871928 =$ the Nat. Sine of 60° 41′; then, the Angle of Inclination EWP, with the Direction of the Wind is 74° 19′; and if the Value of x and y be ſubſtituted in the *Maximum*, it will give 4 Miles 3 quarters 3.00 Yards for the Velocity of the Ship in an Hour; the Velocity of the Wind being as 65 to 1 nearly.

The ſame anſwered by *Nehemiah Noonheed* Eſq.

'Tis demonſtrated, p. 122. vol. iii. *Webſter's Math.* that the moſt advantageous Poſition of the Plane of a Sail for acquiring the greateſt Velocity poſſible, in a given Courſe, ſhall be when the Plane of the Sail divides the Angle of the Courſe with the Direction of the Wind into two equal Parts. Then let *(as per Fig. to Mr Lord's Solution)* EW be the Direction of the Wind, WN the Couſe North Weſt; Draw WP for the Plane of the Sail, making the Angle EWP = PWN ſo ſhall WP make an Angle with the Direction of the Wind = 67° 30′ to drive the Ship in the Courſe WN with the greateſt Velocity poſſible: And this Velocity will be *(per page* 119. *of the ſame)* as the Sine of the ſaid Angle (of Incidence) EWP, when the Sine total expreſſes the Velocity before the Wind; whence *(per Queſt.)* we have this Theorem; As Rad. : to 5 : : ſo is Sine of 67° 30′ : to 4 64 Miles the Velocity in WN *per* Hour.

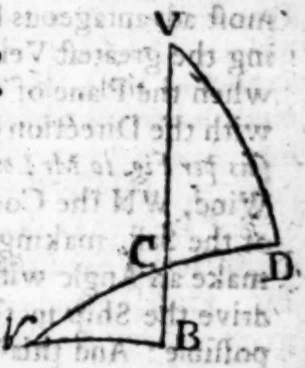
Mr Cha. Maſon, *Mr* William Kingſtone, *Mr* Tho. Moſs, *Mr* John Powle, *and others, anſwer'd the above Queſtion, but muſt excuſe our not inſerting their Solutions, for Room will not admit it.*

(3) Queſtion 93 anſwer'd by Mr *Will. Kingſtone.*

Let s, and c, = Sine and Coſine 23° 29′; m = Tangent of the Altitude of the Equator, = 38° 28′; x and y Sine and Coſ. of the Sun's Right Aſcen. Firſt $1 : c : : \frac{y}{x} : \frac{cy}{x} =$ Cotang. of the Longitude of the Mid-Heaven; and as $1 : \frac{s}{c} :: x : \frac{sx}{c} =$ Tangent of the Declination of the Mid-Heaven; whence $\frac{c-msx}{mc+sx} =$ Cotang. of the Alt. of Mid-Heaven, and then $\frac{sc^2y^2-s^2cmxy^2-mcx-sx^2}{2scxy-s^2myx^2+myc^2} =$ Tang. of the Difference of the Sun's Longitude and Diſtance of the Mid Heaven from the Nonageſimal Degree, which muſt be a *Minimum*, and put into Fluxions and reduc'd gives $x = ,309997 = 18^\circ.4'$, whence the Sun's Longitude $= 19^\circ\ 35'$, which anſwers in the Tables to *Mar.* 29.

Mr *William Sutton*, the Propoſer's Anſwer.

Let V be the Vertex, and VB the Latitude of *London*, D the Nonageſimal Degree in the Ecliptic ♈D; ♈B an Arch of the Equinoctial cutting the Meridian VB at right Angles; and let m and $n =$ Sine and Coſ. of the Sun's greateſt Declination 23° 29′ = C♈B; put $t =$ Tangent of the Lat. of *London* 51° 32′ = VB; and x and $y =$ Sine and Coſ. of ♈B the right Aſcenſion of the *Medium Cœli* at Noon upon the required Day. In the Triangle ♈BC, $1 : y :: m : my =$ Coſ. < ♈CB = VCD. And $1 : n :: \frac{y}{x} : \frac{yn}{x} =$ Cot. ♈C = CD by the Queſt. And $1 : x :: \frac{m}{n} : \frac{mx}{n} =$ Tang. BC. In the Triangle CDV, right angled at D, $1 : my :: \frac{yn}{x} : \frac{mny^2}{x} =$ Co-tang. of CV. But BC + CV = BV. Therefore the Tang. of their Sum $\frac{nx+m^2nx)^2}{mn^2y^2-mxx} = t$, which reduc'd gives $-x^3 + \frac{tn^2+t}{mn}x^2 + \frac{n+m^2}{m^2}x = \frac{tn}{m} \therefore x = ,31503 =$ Sine of 18° 21′ 45″ the Sun's right Aſcenſion; and the Long. ♈C = 19° 53′ 43″, which anſwers neareſt to the 29th of *March* at *London*.



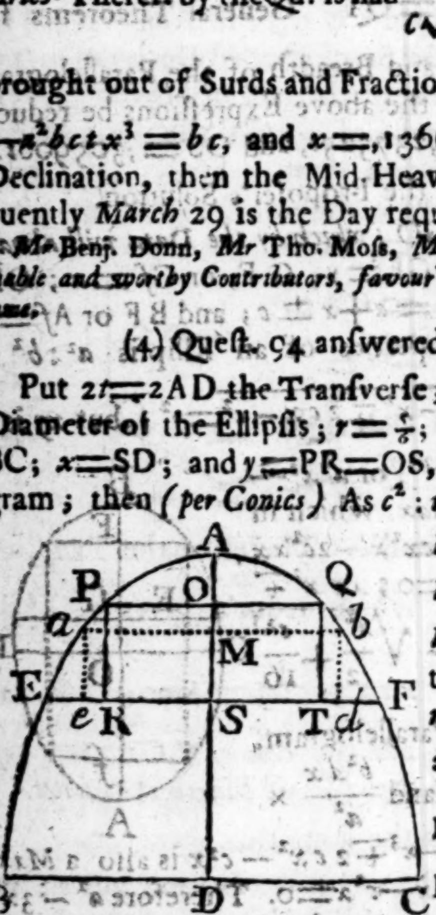
Mr *Lord* ſolves the ſame thus:

For the Co-tangent of the greateſt Declination put a; its Sine b, its Coſine c; for Tang. of the Altitude of the Equator put t; and for the Tang. of the preſent Declination put x.

And then we have $\frac{t+x}{1-tx}$ for the Tang. of the Altitude of the Mid-Heaven; and its Cotang. will be $\frac{1-tx}{t+x}$; then (*per Spherics*) $1 : a :: x : ax$ the Sine of the right Aſcenſion of the *M.* C. and its Coſ. is $\overline{1-a^2x^2}|^{\frac{1}{2}}$; Again, $1 : b :: \overline{1-a^2x^2}|^{\frac{1}{2}} : b\times\overline{1-x^2a^2}|^{\frac{1}{2}}$ the Coſine of the Merid. Ang. then $1 : \frac{1-tx}{t+x} :: b\times\overline{1-a^2x^2}|^{\frac{1}{2}} : \frac{b-btx}{t+x}\sqrt{1-a^2x^2}$ the Tangent of the Diſtance of the Mid-Heaven from the 90th Degree; but $\frac{ax}{\sqrt{1-a^2x^2}}$ is the Tang of the right Aſcenſion of the Sun or *M. C.*; then $c : \frac{ax}{\sqrt{1-a^2x^2}} :: 1 : \frac{ax}{c\sqrt{1-a^2x^2}}$ the Tang. of the Sun, or *M. C.*'s Diſt. from *Aries*. Theref. by the Qu. is had $\frac{ax}{c\sqrt{1-a^2x^2}}=\frac{b-btx}{t+x}\sqrt{1-a^2x^2}$ brought out of Surds and Fractions gives $\left.\begin{matrix}+at\\+bct\end{matrix}\right\}x\left.\begin{matrix}+a\\+a^2bc\end{matrix}\right\}x^2-a^2bctx^3=bc$, and $x=,136694$, the Tang. of 7° 47′ the Declination, then the Mid-Heaven is 18° 53′ *Aries*. Conſequently *March* 29 is the Day required.

Mr Benj. Donn, *Mr* Tho. Moſs, *Mr* John Hollingworth *and other valuable and worthy Contributors, favour'd us with elegant Solutions to the ſame.*

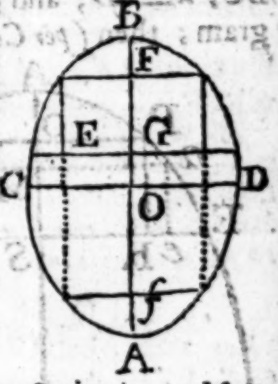
(4) Queſt. 94 anſwered by Mr *Cha. Smith.*



Put $2t=2AD$ the Tranſverſe; and $2c=BC$ the Conjugate Diameter of the Ellipſis; $r=\frac{c}{t}$; then $cr=ES=SF$ parallel to BC; $x=SD$; and $y=PR=OS$, the Breadth of the Parallelogram; then (*per Conics*) As $c^2 : t^2 :: c^2r^2 : t^2r^2=t^2-x^2 \therefore x=t\sqrt{1-r^2}$; Put $m=t-t\sqrt{1-r}=AS$, and $n=t+t\sqrt{1-r^2}=$ the other Part of the Tranſverſe. Hence $AO=m-y$, and $n+y=$ its Comp. Alſo again $t^2 : c^2 :: \overline{m-y}\times\overline{n+y} : \overline{PC}|^2=\frac{c^2}{t^2}\times\overline{m-y}\times\overline{n+y}$; Hence the Area of the ▭ is $\frac{2cy}{t}\times\sqrt{\overline{m-y}\times\overline{n+y}}$ a *Max.* which put into Fluxions and reduc'd, gives $y^2+\frac{3}{4}\times\overline{n-m}\,y=\frac{mn}{2}$ ſubſtitute $t-t\sqrt{1-\frac{2c^2}{3t^2}}$ for m, and $t+t\sqrt{1-\frac{2c^2}{3t^2}}$ for n in this laſt Equation, and it is, when reduc'd $y=\frac{t}{24}\times\sqrt{\sqrt{299}-3\sqrt{11}}=PR=OS$. Let $z=ae=bd$ the Length of the Cylinder, then by the ſame Proceſs $\overline{aM}^2=\overline{bM}^2=\frac{c^2}{t^2}\times\overline{m-z}\times\overline{n+z}$. And the Solidity is $\frac{3{,}1416c^2}{t^2}\times mnz+mz^2-nz^2-z^3$ ∴ $mnz+mz^2-nz^2-z^3$ is a *Max.* which ordered as above is $z^3+\frac{2}{3}\times\overline{n-m}\,z=\frac{mn}{3}$ and by ſub. for n and m as before, and proper Reduction we ſhall have $z=\frac{t}{18}\times\sqrt{\sqrt{119}-2\sqrt{11}}=MS=bd$. And $y=\frac{t}{24}\times\sqrt{\sqrt{299}-3\sqrt{11}}=OS=QT$. General Theorems for the Length of the Cylinder and Breadth of the Parallelogram when $EF=\frac{5}{8}BC$; Or, if the above Expreſſions be reduc'd to the loweſt Terms $MS=,237525t$, and $OS=,305906t$.

Mr *William Jepſon*, the Propoſer's Solution.

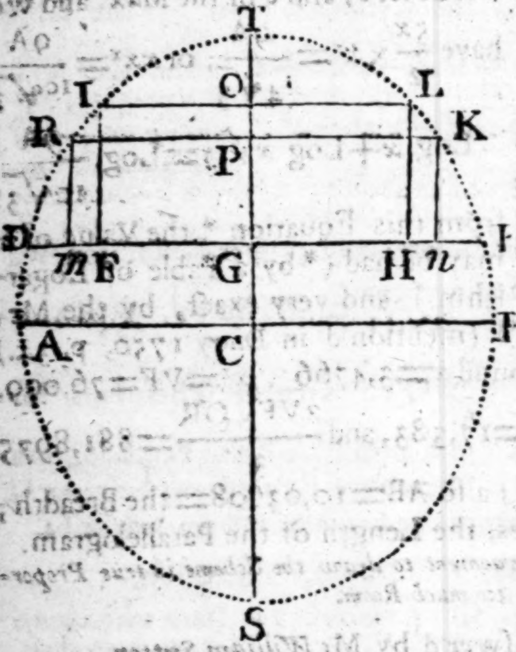
Let $AB=2a$, $CD=2b$, GO *(which by the Data will always be a known Quantity)* $=c$; $GE=y$; GF, or $Gf=x$; OF, or $Of=x\pm c$; AF or $Bf=a+x\pm c$; and BF or $Af=a-x\pm c$. Then by the Properties of an Ellipſis $a^2:b^2::\overline{a+x\pm c}\times\overline{a-x\mp c}:\frac{b^2}{a^2}\times\overline{a^2-x^2\mp2cx-c^2}=y^2$, but xy is a *Max.* ∴ $x\sqrt{a^2-x^2\mp2cx-c^2}$; or $a^2x^2-x^4\mp2cx^3-c^2x^2$, is alſo a *Max.* which in Fluxions is $2a^2x\dot{x}-4x^3\dot{x}\mp6cx^2\dot{x}-2c^2x\dot{x}=0$; ∴ $a^2-2x^2\mp3cx-c^2=0$; or $x^2\mp\frac{3cx}{2}=\frac{a^2-c^2}{2}$; whence $x=\sqrt{\frac{a^2}{2}+\frac{c^2}{16}}\mp\frac{3c}{4}$, is the *Theorem* for the Parallelogram.



Again, Let $d=3{,}1416$, and $\frac{b^2dx}{a^2}\times\overline{a^2-x^2\mp2cx-c^2}$; or. $a^2x-x^3\mp2cx^2-c^2x$ is alſo a *Max.* In Fluxions $a^2\dot{x}-3x^2\dot{x}\mp4cx\dot{x}-c^2\dot{x}=0$. Therefore $a^2-3x^2\mp acx-c^2=0$; or $x^2\mp\frac{4cx}{3}=\frac{a^2-c^2}{3}$, whence we have $x=\sqrt{\frac{a^2}{3}+\frac{c^2}{9}}\mp\frac{2c}{3}$ the *Theorem* for the Cylinder. Q. E. I.

The ſame anſwered by Mr *William Kingſtone.*

Let TC $=$ SC $= a$; AC $=$ BC $= 6n$; DG $=$ GE $= 5n$, GC $= d$, $x =$ GO $=$ IF $=$ LH; $a+d+x =$ SO; $a-d-x =$ TO; Then, by *Conicks* $a^2 : qn^2 :: \overline{a+d+x} \times \overline{a-d-x} : \frac{\overline{a^2-d^2-x^2-2dx}}{a^2} \times qn^2 = \overline{IO}^2 = \overline{OL}^2 \therefore \frac{2x}{a} \times \sqrt{\overline{a^2-d^2-x^2-2dx} \times qn^2}$ $=$ Area of the greateſt Parallelogram; which muſt be a *Maximum*; and, in Fluxions is $a^2\dot{x} - d^2\dot{x} - 2x^2\dot{x} - 3dx\dot{x} = 0$. Therefore $x = \sqrt{\frac{16a^2-7d^2}{32}} - \frac{3d}{4}$ which is a general *Theorem* for all Parallelograms.

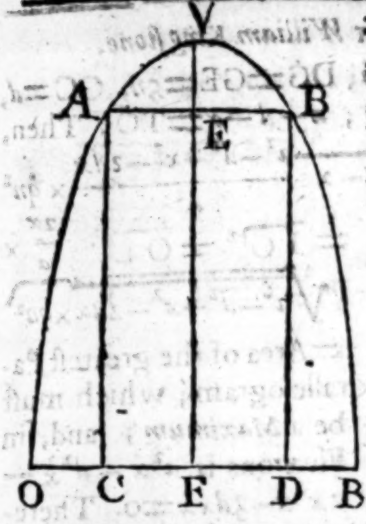


Again, Put $y =$ GP $=$ R$m =$ Kn, then $a+d+y =$ SP, and $a-d-y =$ TP; and (by *Conics*) $a^2 : 9n^2 :: a^2-d^2-y^2-2dy : \frac{\overline{a^2-d^2-y^2-2dy} \times qn^2}{a^2} = \overline{RP}^2 = \overline{KP}^2$. Hence $36\frac{n^2cy}{a^2} \times \overline{a^2-d^2-y^2-2dy} =$ the Solidity of the greateſt Cylinder (*c* $=$ Area of a Circle whoſe Diameter is Unity) which alſo muſt be a *Maximum*, and in Fluxions is $a^2\dot{y} - d^2\dot{y} - 3y^2\dot{y} - 4dy\dot{y} = 0 \therefore y = \frac{\sqrt{3a^2+d^2}-2d}{3}$ which is a general *Theorem* for a Cylinder.

Mr William Sutton, *Mr* Samuel Heartly, *Mr* Abr. Lord, *Mr* Benj. Dobn, *Mr* William Spicer, *Mr* Tho. Moſs, *Mr* Paul Sharpe, *and ſeveral Contributors, ſent us Solutions to this Queſtion, which cannot be inſerted; but hope they'll excuſe it, believing they muſt be ſenſible it would be impoſſible for us to inſert every Solution to every Queſtion at large.*

(5) Queſt. 95 anſwer'd by Mr *Cha. Smith.*

Let $2z =$ AB $=$ CD the Breadth of the Parallelogram; the Abſciſſa VF $= x^2 = b$, and $2c = 5x =$ OR the Ordinate of the Parabola; then by the Property of the Curve as $c^2 : b :: z^2 :$ EV $= \frac{bz^2}{c^2} \therefore$ EF $= b - \frac{bz^2}{c^2}$ and $2bz - \frac{2bz^3}{c^2} = 509.16723$ $=$ A



$=$ A the Area of the Parallelogram, a *Max.* $\therefore b c^2 \dot{z} - 3 b z^2 \dot{z} = 0$; $\therefore z^2 = \frac{c^2}{3}$, and $z = \frac{c}{\sqrt{3}}$. Subſtitute the Values of z, b, and c in the *Max.* and we have $\frac{5x}{2} \times x^x = \frac{9A}{4\sqrt{3}}$; or $x x^x = \frac{9A}{10\sqrt{3}}$ $\therefore$ Log. $x +$ Log $x \times x =$ Log. $\frac{9A}{10\sqrt{3}}$, from this Equation * the Value of x may be had (* by a Table of Logarithms) and very exact, by the Method of Trial and Errors (mention'd in *Diary* 1750, p. 34.) for at two Operations I found $x = 3,4766$ $\therefore x^x = VF = 76,099$, or 76,1 nearly, $5x = OR = 17,383$, and $\frac{2VF \times OR}{3} = 881,8975$ ſquare Poles for the Area; alſo $AB = 10,03608 =$ the Breadth; and $AC = 50,73334$ Poles, the Length of the Parallelogram.

N. B. *I did not think it convenient to draw the Scheme in true Proportion, becauſe it would take up too much Room.*

The ſame anſwer'd by Mr *William Sutton.*

Let $x^x = a$ the Abſciſſa, $5x = 2b = OR$, or $b = \frac{5x}{2}$, and let $z = EB$, the Semiordinate bounding the greateſt Parallelogram (ſee Mr *Smith's* Scheme above) and then by the Properties of the Parabola $b^2 : a :: z^2 : \frac{a z^2}{b^2} = EV$ $\therefore a - \frac{a z^2}{b^2} = EF$; and the Area of the Parallelogram $\frac{2 a b^2 z - 2 a z^3}{b^2} = A = 509,16723$, which former Expreſſion of the Area put into Fluxions and reduced, gives the Relation of the Ordinates FR and EB. $z = \frac{b}{\sqrt{3}}$ and ſubſtituting the Value of z in the Expreſſion of the Area above, We have $ab = \frac{9A}{4\sqrt{3}}$, and by reſtoring the Values of a and b, the Equation becomes $x x^x = \frac{9A}{10\sqrt{3}}$. Therefore Log. $x +$ Log. $x \times x =$ Log. $\frac{9A}{10\sqrt{3}}$, from whence $x = 3,47661$ is found, and the Area $= 881,92$ Poles.

The ſame anſwer'd by Mr *William Spicer.*

Put $y =$ AB (*ſee the laſt Fig.*) then *per* Nature of the Curve, As $\overline{OR}^2 : FV :: \overline{AB}^2 : EV = \frac{x^{x-2}}{25}$; and $\frac{x^x 25 - x^{x-2}}{25} =$ FE; $\therefore \frac{x^x 25 y - x^{x-2} y^3}{25}$ is a *Max.* fluxion'd and reduced gives $y = \frac{5x}{\sqrt{3}}$; and $\frac{x^x 2}{3} =$ EF; put Log. of $\frac{10}{3\sqrt{3}} = d$, and that of 509,16723 $= m$; then we have x Log. $x +$ Log. $x = m - d$. Th. Log. $x = \frac{m-d}{x+1} = \frac{2,4224216}{x+1}$; and by common Logarithms I find $x = 3,476497$. Th. $x^x = 76,08138$; $5x = 17,382485$, and the Area = 5 Acres, 2 Roods, 1,655 Poles.

Mr *Tho. Perryam*, of *Yeovil*, ſolves it thus:

The greateſt Parallelogram that can be inſcribed in a common Parabola, is equal the Area of the whole Parabola multiplied by $\sqrt{\frac{1}{3}}$.

Put $x^x = v$; $5x = y$; $\sqrt{\frac{1}{3}} = b$; and 509,16723 $= a$; then is $\frac{2yv}{3}\sqrt{\frac{1}{3}} = \frac{10bx^{x+1}}{3} = a$; or, $x^{x+1} = \frac{3a}{10b} = 264,5711$; which may be ſolved by thd common Tables of Logarithms thus: Put $r = ,43429448$ the *Module* of the common Log. $g =$ tabular Log. of 264,571 $= 2,4225423$. Let n be aſſum'd a Number nearly $= x$, $m =$ Tab. Log. of n, and $z =$ Difference between n and x, then is $z = \frac{g - \overline{n+1} \times m}{m + \overline{n+1} \times \frac{r}{n}}$.

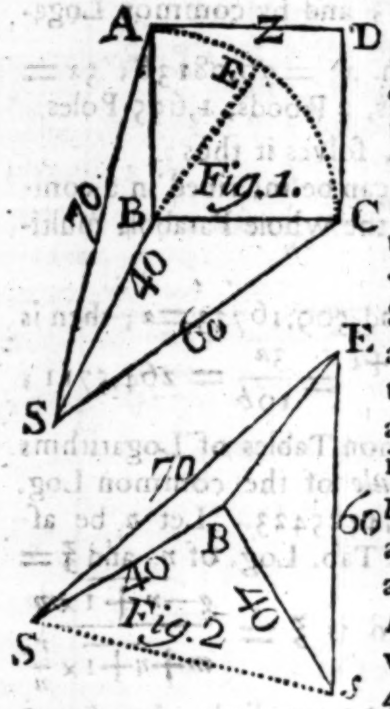
I find by Trial that 4 is too big, and 3 too little, therefore I make $n = 3,5$; then $m = ,545$, and $z = -,027$, whence $n + z = 3,73 = n$ for a ſecond Operation; then $m = ,5407048$, $\overline{n+1} \times m = 2,4185725$, $g = 2,4225423$, whence $g - \overline{n+1} \times m$ is $= 0,0039698$, and $m + \overline{n+1} \times \frac{r}{n} = 1,1$, whence alſo we have $z = \frac{,0039698}{1,1} = ,00361$, and $n + z = 3,47661$, then $x^x = 76,1003$, $5x = 17,38305$, and 880 860566 ſquare Poles is the Area of the Garden.

The ſame anſwer'd by Mr *Benj. Donn.*

Let the Semiordinate $= b$; the *Latus Rectum* $= p$; $m =$,5773; $c =$ 509,16723; Then 'tis eaſily demonſtrated from

Fluxions, that $\frac{2b^3m - 2m^3b^3}{p}$ = the Area of the greateſt Parallelogram; By Conics $x^x : \frac{5x}{2} :: \frac{5x}{2} : \frac{25x^2}{4x^x} = p$ ∴ ſubſtituting $\frac{25x^2}{4x^x}$ for p, and $\frac{5x}{2}$ for b in the above Equation for the Area, and you'll get $\overline{5m - 5m^3} \times x \times x^x = c$. From this Equation x will be found = 3,4766; conſequently the *Abſciſſa* $= x^x = 76,1$, the Ordinate $= 5x = 17,383$; and the Area = 881,8975.

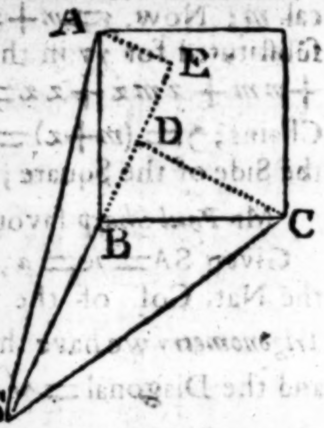
(6) Queſt. 96 anſwer'd by Mr *Lhewelin Davies*.



If the two Triangles SBA and SBC are conceiv'd as cut, and to open aſunder in the Line SB, and the Point B conceiv'd as a Centre; Then in *Fig*. 1. imagine A and C moveable till they meet in E; ſo that BA and BC become one Line, *viz*. BE; then will the Triangles SBA and SBC, open in the Point S, and become as in *Fig*. 2. wherein the Angle SBs will be a right Angle; as ABC was ſuppos'd a right Angle in *Fig*. 1. at the Beginning. Then in *Fig*. 2. $Ss = \sqrt{40^2 + 40^2}$, whence all the Sides of the Triangle SEs, are known; and conſequently the Angle ESs = 55° 22′ 28″, from which, deduct the Angle BSs, *viz*. 45° (becauſe SB = s3) remains the Angle ESB = 10° 22′ 28′. Then, in the Triangle ESB are given SB, SE, and the Angle S; whence BE ($= z$) = 31,4885 Chains = the Side of the Square required; conſequently its Area = 991,5856 ſq. Chains = 99,15856 Acres.

Mr *William Sutton* anſwers the ſame thus:

Let $b = 70 = AS$; $c = 40 = SB$; and $d = 60 = SC$; continue SB to E, and let fall the Perpendiculars AE and CD upon that Line. Let x = the Side of the Square AB; and z = DC, or EB; for the Triangles AEB, and BDC are equal and ſimilar. Then (*per* 47 *Eu*. 1.) $xx - zz = \overline{BD}|^2 = \overline{AE}|^2$; and



$bb - cc - 2cx - xx = x^2 - z^2$; alſo $c^2 + 2c\sqrt{x^2 - z^2} + x^2 - z^2 = d^2 - z^2$; and by comparing the Values of x^2 in theſe Equations, we have, after Reduction $x^2 + 23.75x = 1517,96875$; whence $z = 28,85563$; and alſo $x = 31,488$ the Side of the Square required i found, and the Area $= 991,5485$ Chains $= 99$ A. 0 R. 24 P.

The ſame anſwer'd by Mr *W. Whalhead*

Let SA $= a$; SB $= b$; SC $= c$ (*ſee Fig. in laſt Year's Diary; or Mr Llewelin Davis's*) on SB produced, let fall a Perpendicular from A, which call x; and one from C, which call y; which will form within the Square two equal and ſimilar Triangles (becauſe the Sides AB and CB, are the Sides of a Square) Then (*per Euc.* 47.1.) $aa = bb + 2by + yy + xx$; and $cc = bb + 2bx + xx + yy$; In the firſt Equation $y = \sqrt{aa - xx} - b$, which ſquar'd, and ſubſtituted for yy in the ſecond, we have $cc = bb + 2bx + xx + aa - xx + bb - 2b\sqrt{aa - xx}$ $\therefore \sqrt{aa - xx} - x = \frac{2bb + aa - cc}{2b} = 56,25$, which call n; hence $\sqrt{aa - xx} = n + x$ ſquared, and we form this Quadratic Equation $xx + nx = \frac{aa - nn}{2}$; and ſolv'd $x = \sqrt{\frac{aa - nn}{2} + \frac{nn}{4}} - \frac{n}{2} = 12,6056$. And the Area of the Square $= 991,506$, alſo the Side $31,4882$ Chains.

Mr *Tho. Ward's* Solution of the ſame.

Produce SB to E (ſee Mr *Sutton's* Scheme) let fall the Perpendiculars AE and CD; then will the Triangle AEB and BDC have their Sides and Angles alike; for the Angle DBC + DCB = a Right Angle; and DBC + DBA = a Right Angle alſo; therefore DCB = DBA; and the Hypotheneuſe of each being the Side of the Square, their other Sides will alſo be equal.

Now, call SA $= b$; SB $= c$; SC $= d$; BE ($=$ DC) y; and AE ($=$ BD) $= z$, *per Eu.* 47. 1. $\begin{cases} cc + yy + 2cy + zz = bb. \\ cc + zz + 2cz + yy = dd. \end{cases}$ The latter ſubſtracted from the former, and the Remainder divided by $2c$, gives $y - z = \frac{bb - dd}{2c} = \text{DE} = 16,25$, which call cal m; Now, $y=m+z$, and $yy=mm+2mz+zz$; which ſubſtituted for yy in the ſecond Step becomes $cc+zz+2cz+mm+2mz+zz=dd$. Reduc'd, we have $z=12,6068$ Chains; $y=(m+z)=28\,8568$, $\sqrt{yy+zz}=31,49041=$ the Side of the Square; and its Area $=99$A. 0R. 26,34P.

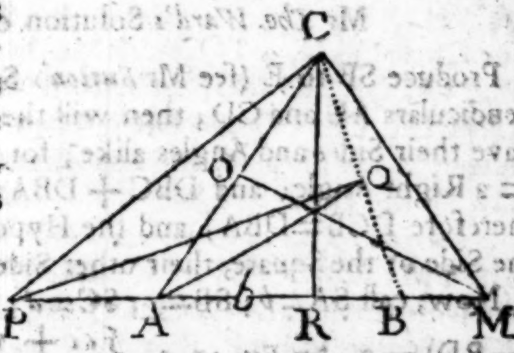
Mr *Paul Sharp* favours us with the following Solution.

Given SA $=70=a$; SC $=60=b$, and SB $=40=c$; Put the Nat. Coſ. of the Angle CSB $=y$; Rad. $=1$; then by *Trigonometry* we have the Side of the Square $=\sqrt{b^2+c^2+bcy}$; and the Diagonal $=\sqrt{2b^2+2c^2-4bcy}=$ AC; whence, the Sine and Coſine of the Angle ASB $=\sqrt{1-\overline{n+my}^2}$ and $n+my$ (putting $\frac{a^2-b^2}{2ac}=n$, and $\frac{b}{a}=m$) ∴ the Coſine of the Sum of the Angles CSB + ASB, $=ny+my^2-\sqrt{1-y^2}\times\sqrt{1-\overline{n+my}^2}$; alſo the Coſine of the Angle ASC $=\frac{a^2+b^2-2b^2-2c^2+4bcy}{2ab}$ $=py-q$ (putting $\frac{2c}{c}=p$, and $\frac{a^2-b^2-2c^2}{2ab}=q$) ∴ $ny+my^2-\sqrt{1-y^2}\times\sqrt{1-\overline{n+my}^2}=py-q$.

Solv'd $y=,87674=61°\ 15'\ 17''=$ the Comp. of the Angle BSC, whence BC $=31,4874$ Chains, the Side of the Square ſought; and the Area $=99$ A. 0 R. 23 P.

Mr Charles Smith, *Mr* R. Pitches, *Schoolmaſter*, *Mr* John Hollingworth, *Mr* Roger Widger, *Mr* Sem. Leaver, *Mr* William Earle, *Mr* Ralph Brockſopp, *Mr* John White, *and ſeveral others, ſent us Solutions to this Queſtion. See the Catalogue.*

(7) Queſt. 97 anſwer'd by Mr *Charles Smith*.

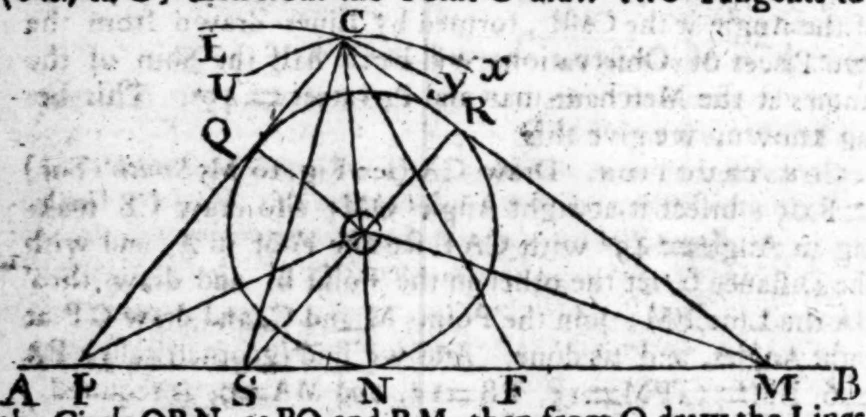


Let M repreſent the Merchant-man, P the Privateer, and C the Caſtle; Then, if A be the Place of the firſt Obſervation, B that of the ſecond; there is AB $=6$, and AC $=8,05$ Miles, CM $=$ AM, PB $=$ CP; and PCM a right Angle; Draw the right Line CB, and the Perpendiculars CR, MO, and PQ. The two latter biſſecting the Angles CMA and CPB, and alſo the Sides AC and CB (*per* 6 *Eu.* 1.) Then the Angle ACR $=\angle$AMO; and the Angle RCB $=\angle$QPB ∴ $\angle$CMP

$\frac{\angle CMP+\angle MPC}{2}=\frac{90^\circ}{2}=45^\circ$. Now, in the Triangle ACB are given the Sides AC and AB, and the Angle at C $=45^\circ$, to find BC $=7,5892$ Miles; the Angle B $=71^\circ\ 34'\ 6''$; and A $=63^\circ\ 25'\ 44''$; but AO $=\frac{AC}{2}$ and BQ $=\frac{BC}{2}$; hence in the Right-angled Triangles MOA and PQB we have all the Angles, and the Sides AO and BQ to find PB $=$ PC $=12$, MA $=$ MC $=9$, PA $=6$, and BM $=3$ Miles.

The ſame anſwer'd by Mr *William Earle*.

Construction. On the indefinite right Line AB, lay the Diſtance the Ship ſail'd $=6$ Miles from S to F, and biſect the Line SF in N; from the Point N erect a Perpendicular $=$ half the given Line SF; and at O, as a Centre with the Radius ON, deſcribe the Circle QRN; then take the Diſtance from O to S; and at O, as a Centre, deſcribe the Arc U*x*; then take the Diſtance from the Ship to the Caſtle $=8,05$ Miles, and at S, as Centre, croſs the Arc U*x* with the Arc LR (*viz.*) in C; then from the Point C draw two Tangents to the Circle QRN, as PQ and RM, then from O draw the Lines PO, OQ OR and OC; and from the Point at C draw the Lines CS, CF, CQ and CR; Then will P repreſent the Privateer, S the Ship, C the Caſtle, and M the Merchant-man; alſo SF the Diſtance ſailed.



Demonstration. Becauſe NO is at right Angles with the Baſe PM; alſo OQ with PC; for QP and PN are Tangents to the ſame Circle, and ON $=$ OQ (by Conſtruction) and the Side PO common to both; therefore the Triangles PNO and POQ are equal and ſimilar, conſequently PN $=$ PQ and CO $=$ SO; alſo OQ $=$ ON, likewiſe the Angle CQO $=$ Angle SNO both being Right ones; therefore the Triangles SNO, CQO are equal and ſimilar, Conſequently QC = SN; PN = PQ (which was prov'd before.) Alſo PC = PF, and by the ſame way is prov'd that MC = MS.

Method of Calculation. In the Triangle SON = the Triangle QOC are given all the Sides, and conſequently all the Angles; and the ſame in the Triangle SCO; But the Angle SOC — Angle QOC = Angle SON = QOS, therefore QOS + Angle SON is known; and alſo $\frac{1}{2}$ QON = PON = POQ; which Angle POQ, and the Side QO being known, PQ or PN may be found. Hence the Diſtance from the Merchant-man to the Privateer = PM = 18,0038 Miles; and the Diſtance from the Ship to the Privateer = SP, at the firſt Obſervation = 6,00085 Miles; and his Diſtance SM from the Merchant-man = 9,00085 Miles. And at the ſecond Obſervation his Diſtance from the Privateer was = 12,00085 Miles = FP, and to the Merchant-man = FM = 3,00085 Miles.

Mr *William Whalhead* anſwers the ſame thus:

By the Nature of the Queſt. 'tis demonſtrable, that That Part of the Angle at the Caſtle, formed by Lines drawn from the two Places of Obſervation, will be = half the Sum of the Angles at the Merchant-man and Privateer = 45°. This being known, we give this

Construction. Draw CA (ſee Fig. to Mr *Smith's* Sol.) = 8,05; biſect it at right Angles OM; alſo draw CB making an Angle = 45° with CA; ſet one Foot in A, and with the Diſtance 6, ſet the other in the Point B, and draw thro' BA the Line PM; join the Points M and C, and draw CP at right Angles, and 'tis done. And we find (geometrically) PA = 6, BM = 3, PM = 15, PB = 12, and MA = 9, as required.

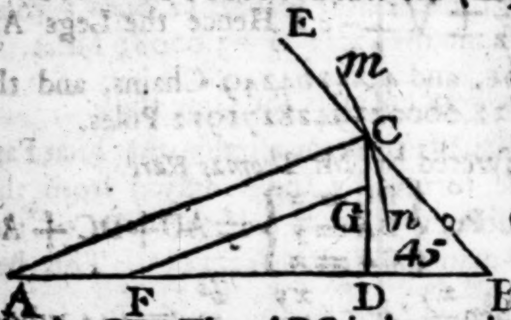
The ſame anſwer'd by Mr *Thomas Moſs*.

In the Triangle CBA are given the two Sides CA = 8,65 (ſee Fig. to Mr *Smith's* Sol.) AB = 6; and the Angle ACB = 45°; whence the Angle CAB = (MCB) = 63° 26′ ∴ the Angle RCA = 26° 34′; but (by Conſ.) the Angle ACP = ACR; then in the Triangle ACP are given all the Angles and the Side AC, whence (by *Trig*.) CP is found = 12, and AP = 6 Miles = the Diſtance I was from the Privateer at the firſt Obſervation; Then in the right-angled Triangle MCP are given all the Angles, and the Side CP; whence MP = 15 Miles, the required Diſtance of the Ships ∴ BM (= MP — BP; or MP — CP) = 3, my Diſt. from the Merchant-man at the 2d Obſervation.

(8) Queſt. 98 anſwered by Mr *Thomas Moſs*.

Since (*per Euc.* 19. 6) the Areas of ſimilar Triangles are to each other, as the Squares of their homologous Sides; it follows therefore, that as $\frac{A}{2}$ (half the Area of the required Triangle) : A (the whole Area thereof) :: a^2 (the Square of the given Hypotheneuſe) : $\frac{a^2A}{\frac{1}{2}A} = 2a^2$; $\because \sqrt{2a^2}$, or $a\sqrt{2} =$ 28,284 Poles, or 7,071 Chains, the required Hopotheneuſe; Now there is given the Hypotheneuſe (7,071) and the Sum of the Sides (9,899) of a right-angled Triangle to find the Sides; whence this

CONSTRUCTION. Draw AB (=9,899) the given Sum of the Sides; make the Angle ABE=45°, and upon the Point A (as a Centre) with a Rad.=7,071 the given Hypotheneuſe deſcribe the Arch *m*C*n*, cutting BE in C; join AC and let fall the Perpendicular CD; Then ADC is the required Triangle, the Demonſtration of which is plain at one View, from the Conſtruction.



CALCULATION. In the Triangle ABC, are given the Sides AC (7,071) AB (9,899) and the Angle B=45°; whence (by *Trig.*) BC=8,002, and $\because$ CD (DB)=5,659; alſo AD=4,24; and conſequently the required Area=11,99708 Ch.

The ſame anſwer'd by Mr *Joseph Orchard*.

Seeing that FG (ſee Fig. above)=20 Poles or 5 Chains is parallel to AC, and divides the Area of the Triangle ADC into two equal Parts (*per Queſtion*) and alſo that the Areas of like Triangles are in a duplicate Ratio of their homologous Sides (*per* 19 E. 6,) it is eaſy to conceive that $\overline{AC}^2 = 2 \times \overline{FG}^2 = 50$. Th. AC $= \sqrt{50} = 7{,}071068$; which taken from the Perimeter, leaves $9{,}899494 = AD + DC$; Let AC $= b$; and AD + DC $= s$; then will AD $= \frac{s + \sqrt{2b^2 - s^2}}{2} = 5{,}6568$; and DC $= \frac{s - \sqrt{2b^2 - s^2}}{2} = 4{,}2426$ (*Vide Ward's Introduction*, p. 323) and the Area is nearly $1\frac{2}{5}$ Acres.

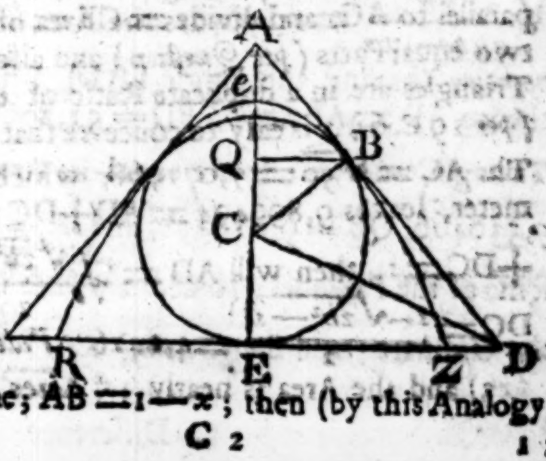
Mr *Edward Griffiths* anſwers it thus:

Let DAC be the Triangle, and FG (ſee Mr *Moſs's* Fig.) be the Line which divides it into two equal Parts, and let $a =$ the Area of the leſſer Triangle DFG; then *(per Queſtion)* $2a$ will be the Area of the greater; and let FG $=$ 20 Poles $= b$, *&c.* Then $a : b^2 :: 2a ; 2b^2 =$ the Hypotheneuſe of the greater Triangle $= 7{,}0710675$ Chains $=$ AC; which call h; then the Sum of the other two Sides will be 9,8994951 Chains, which call s; Then put $x =$ AD; and the other Leg will be $s - x$, or DC; Therefore $h^2 = x^2 + s^2 - 2sx + x^2$; that is $2x^2 - 2sx = h^2 - s^2$. which divide by 2, and it is $x^2 - sx = \frac{h^2 - s^2}{2}$; then for $\frac{h^2 - s^2}{2}$ ſubſtitute c, and it will be $x^2 - sx = -c$; which being ſolv'd, gives $x = \frac{s}{2} \pm \sqrt{\frac{s}{4} - c}$; Hence the Legs AD and DC, are 5,65685261, and 4,24264249 Chains, and the Area 1 Acre, 0 Roods, 32,000025942827191 2 Poles.

The ſame anſwered by Mr *Thomas Hare.*

Given FG $=$ 5 Chains. Put $\left\{\begin{matrix} \text{DC} = x \\ \text{DA} = y \\ \text{CA} = z \end{matrix}\right\} =$ AD $+$ DC $+$ AC $= 16{,}9705628 = b$. Then $\frac{xy}{2} : b^2 :: \frac{xy}{4} : \frac{b^2}{2} = 144$, whoſe ſquare Root is $= 12 =$ GD $+$ DF $+$ FG; then again $12 - 5 = 7 =$ GD $+$ FD: and $7 - z =$ FD; and $z^2 + 49 - 14z + z^2 = 25$. Reduc'd $z = 4$, and $7 - 4 = 3 =$ GD. Then $6 : 9 :: 12 : 18$ whoſe $\sqrt{} =$ CD; and $6 : 16 :: 12 : 32$, whoſe $\sqrt{} =$ AD; alſo AC $= \sqrt{50}$. But $\sqrt{32} \times \frac{\sqrt{18}}{2} = \frac{\sqrt{576}}{2} = \frac{24}{2} = 12$ Ch. Area.

(9) Queſt. 99. anſwer'd by the Propoſer Mr *Cha. Smith.*



Draw the Radius CB to meet the Ordinate QB in B, the Point of Contact; and the Line CD, which will biſect the Angle ADE. Make AP $=$ AD $=$ Rad. $= 1$. Put $x =$ BD $=$ ED $=$ Sine of the Angle EAD, and $= y =$ AE its Coſine; AB $= 1 - x$; then (by this Analogy)

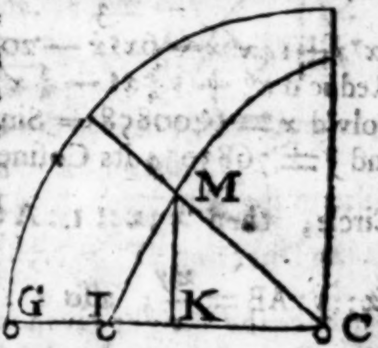
$1 : 1-x :: x : QB = x-x^2 :: y : QA = y-yx$; (*per Conics*) $Ae = eQ = \frac{y-xy}{2}$, and $eE = \frac{y+xy}{2}$. Alſo $eQ : \overline{QB}|^2 :: eE : \overline{EZ}|^2$; *i. e.* $\frac{y-xy}{2} : \overline{x-x^2}|^2 :: \frac{y+xy}{2} : \frac{\overline{y+xy}\times\overline{x-x^2}|^2}{y-xy} = xx-x^4 = \overline{EZ}|^2$. Hence $\frac{2\times\overline{y+xy}\times\overline{x-x^2}|^2}{3}$ = the Area of the Parabola, when the Side $AD = AP = 1$; and by Involution, and ſubſtituting $1-x^2$ for y^2, it will be that $\frac{\overline{4x^8+8x^7-4x^6-16x^5-4x^4+8x^3+4x^2}|^{\frac{1}{2}}}{3}$ is a *Maximum* ∴ $8x^7\dot{x}+14x^6\dot{x}-6x^5\dot{x}-20x^4\dot{x}-4x^3\dot{x}+6x^2\dot{x}+2x\dot{x}=0$. Reduc'd $x^6+1\frac{3}{4}x^5-\frac{3}{4}x^4-2\frac{1}{2}x^3-\frac{1}{2}x^2+\frac{3}{4}x=-\frac{3}{4}$. Solv'd $x = ,6400858$ = Sine of 39° 47′ 53″ 34‴ = ∠EAD; and $y = ,7683034$ its Coſine. Let $z = CB = CE$ = Rad. of the Circle; then $x : z :: 1 : AC = \frac{z}{x}$ ∴ $AE = \frac{xz+z}{x}$. And $x : z :: y : AB = \frac{zy}{x}$; alſo $1 : \frac{zy}{x} :: y : AQ = \frac{zy^2}{x}$ ∴ $Ae = eQ = \frac{zy^2}{2x}$ and $eE = \frac{2xz+2z-2zy^2}{2x}$; put $n = \frac{2x+2-y^2}{2x}$ (= 2,1001881) then $eE = nz$, and $QB = zy$ (by comm. Properties) $\frac{zy^2}{2x} : z^2y^2 :: nz : \overline{EZ}|^2 = 2nxz^2$. Sub. $p = \sqrt{2xn}$ (= 1,640085) then $\frac{4pnz^2}{3}$ = Area of the Parabola, and $4az^2$ = Area of the Circle (a, being = ,7854) ∴ $\frac{4pnz^2}{3} - 4az^2 = 209,058 = d$ ∴ $4pnz^2 - 12az^2 = 3d$, and $z = \sqrt{\frac{3d}{4pn-12a}} = 11,99402 = CE = CB$; whence by *Trigonometry* (having the Angle EAD) I find $AE = 30,732164$, thence $AD = AP = 40$, $PD = 51,206864$, the Sides of the Triangle, and 786,84881 equal its Area, $\frac{AQ}{2} = eQ = 5,530466$, $QB = 9,215038$, and $eE = 25,201698$ = the Abſciſſa of the Parabola; Hence $2\sqrt{\frac{eE\times\overline{QB}|^2}{eQ}} = RZ = 39,34243$ the Ordinate; and the Area is $\frac{2}{3}eE\times RZ = 660,9973596$ &c.

and $a\times\overline{2CB}|^2 = 451,9896297$

Difference = 209,058

N B. If the Angle PAD was a right Angle, the Area of the *Parabola* would be conſiderably leſs,

(10) Queſtion 100 anſwer'd by Mr *Sam. Bamfield*.

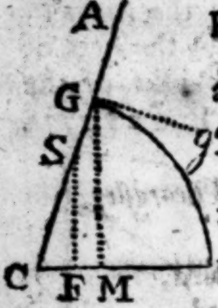


If any Solid be tegular, inflexible, and of equal Dimenſions at both Ends (no matter what Form) and born up (for inſtance) by the two Globes G and C; then 'tis very evident that each Globe muſt ſuſtain an equal Weight, or 185 Pounds (as *per Queſt.*) But the different Weights are as the Areas of the two Baſes (or Ends.) Therefore I ſay, that as the Area of both the circular Ends 141,2774 : is to the Weight of the Body 370 :: ſo is the Area of the leſſer circular End 28 2774 : to its reſpective Preſſure on G, = 74 Pounds; which being leſs than 100 Pounds, proves that the Man muſt ſtand ſomewhere in the Line GC, ſhort of the ſmall End (in the preſent Caſe) G in order to raiſe and ſupport the propos'd Weight. Becauſe, the more the ſmaller End is elevated, the leſs will its Weight be (and the contrary) for, when it becomes perpendicular, the whole Weight 370 Pounds will be on that Globe at C. *Note*, The Weight at the ſmall End, while it is raiſing, decreaſes, as the even Degrees of a *Circle*; not as the *Sines* or *Chords*; and, it may be obſerved that I have now conſider'd the *Axis* of the Tree to be horizontal; not the Side; for ſo doing, the Weight at the leſſer End would be ſomething leſs than 74 Pounds. The whole Solution would be prolix; therefore I ſhall only ſhew the *Method*, which is thus. Put x=CM=CI, and other Letters for known Quantities (for there are ſufficient given) then find the Diameter at I or M, and the Weight which would be on I, if the Tree was no longer (as above.) Then find the *real* and *abſolute* Weight of the leſſer Part GI, which add to the laſt Weight found, and then you have the Weight on the Globe I: Now having the *Rad.* and *Sine*, you may (by *Emerſon's Fluxions*, p. 117.) find the Length of the Arch IM. Then ſay, As the Periphery of the Circle is to its Degrees ſo is the Arch to its Degrees. Now again ſay, If the Tree in raiſing 90°, loſe the whole Weight which was on I, what will thoſe Degrees laſt found loſe? which Weight, when found, being ſubſtracted from the whole Weight on I, leaves the true Weight at M; which (*per Queſt.*)

Queſt.) is $=$ 100*lib.* from which Equation the *Rad.* may be found, and conſequently the Angle of Elevation.

Mr *Abr. Lord*, the Propoſer, ſolves it thus:

Let the Piece be repreſented by AC, and firſt find the Diſtance (G) of the Centre of Gravity from the End C, which will be found $=$ 5,5 Feet. Let FS, the Height of the Shoulder $= d$, for CG put c, for 370*lib.* put a, and for 100*lib.* put b; Sine CGM $= x$, its Coſ. $= y$, Rad. $= 1$. Then (*per Mechanics*) $1 : x :: a : ax$, the Force at G in the Direction Gg; Again $y : d :: x : \frac{dx}{y} =$ CF, and $y : d :: 1 : \frac{d}{y} =$ CS; again $\frac{d}{y} : c :: ax : \frac{caxy}{d} =$ the Power to ſupport the Piece at the Point S, in a Direction perpendicular to it; But $\frac{dx}{y} : \frac{d}{y} :: \frac{caxy}{d} : \frac{cay}{d}$ the Force or Weight in the Direction SF, which muſt be $= b$, therefore $y = \frac{bd}{ca}$, but ſince the Weight given is leſs than the Level weight of the leſſer End of the Piece, the Complement of y to a right Angle muſt be taken, conſequently the Angle C $= 75° 46'$.



We once more return Thanks to our worthy Contributors, *hoping they will continue their Favours as uſual; and take this Opportunity of aſſuring them, that it is our Reſolution to do Juſtice to their reſpective Performances, as far as lyes in our Power, and Room will admit; but as it is impoſſible for us to publiſh any thing near the Number of Solutions we annually receive from them, hope we may be excus'd, as it is evident that we are obliged very often to omit inſerting as good Solutions as thoſe we publiſh.*

The PARADOXES *anſwered.*

Paradox I. anſwer'd by *Nathan Lomax.*

THE BONE that's meant, if right I hit,
Has often try'd Men's ſharpeſt Wit;
Since, with *Woe* from *Man's* Side it came,
WOMAN therefore is its Name.

Paradox II. anſwer'd by Mr *Joſeph Orchard.*

YESTERDAY's paſt, which once was call'd To-morrow;
This ſome perhaps do find unto their Sorrow.

The

The REBUS anſwer'd by Mr *Thomas Allen*.

The Notes being ſet to the Tune of an *Aſs*,
I think I may venture to tune it;
Then (if my Solution will currently paſs)
MELTON MOWBRAY's the TOWN, I preſume it.

Anſwers to the Ænigma's in laſt Year's Diary.

1. BELLOWS.
2. DARKNESS.
3. A VANE, or WEATHER-COCK.
4. MODESTY.
5. CONTENT.
6. HOPE.
7. An ARSE.

All the Ænigmas anſwer'd by Mr *Samuel Beardſley*.

WHEN firſt *Aurora* in the Eaſt appear'd,
Th' ethereal Goddeſs, as her Chariot roll'd,
Diſpers'd the DARKNESS by her ſole Command. 2
Great *Sol*, not * BASHFUL, with his ſpotly Face 4
Reluctant ſhone; e'er long, ſome ſable Cloud
Of Extent vaſt, from *North* to *South* aroſe
It ſeem'd ———
Œolus, potent, ſent the ruffled Wind,
Whoſe ſtrengthen'd Lungs enabled him to blow
With Violence; as when an Organiſt
The BELLOWS blows, and ſets his Tune in Form: 1
Juſt ſo the God. Tempeſtuous Storms deſcend!
The beaten Trav'ler mends his weary Pace,
And runs for Shelter to a Cottage low;
The *Cloud* quite ſpent; his Eyes at length he throws
Around, and forthwith ſpies a VANE. From off 3
His BREECH he roſe, and walk'd with Mind ſedate; 7
With great CONTENT he trips along the Plain, 5
In HOPES to free him from the driving Rain. 6

Mr *Daniel Iliff* anſwers all the Ænigmas, Paradoxes, and Rebus, in the following Letter from a Lover to his intended Spouſe.

To *You*, my Dear, greeting; You muſt underſtand;
A good *Houſe* I've prepar'd, and ſome *Acres* of Land;
With a pleaſant BACKSIDE adjoining thereto, 7
Which gives *me* CONTENT, and I HOPE they will *You*: 5, 6
But (thou WOMAN of Worth) I'd have thee prepare, 1 *Par.*
Some Things we ſhall want; BELLOWS and ſuch Ware; 1

---

* Alluding to *Modeſty*.

Soon will be TIME PAST; when we *both* muſt away 2 *Par.*
To take *Hymen's* Yoke on, at MELTON MOWBRAY. *Reb.*
For that is the Town where this Houſe I've prepar'd,
In which muſt our *Pleaſures* and *Troubles* be ſhar'd:
To *Thee* I ſend this, let it not be in *Vain*, [VANE] 3
Preſerve but thy Love, till thou ſeeſt me again;
Then I'll ſwear by my MODESTY (if any there be 4
In *Mankind*) from thy Charms I never will flee:
But I now muſt conclude; no more can I write,
DARKNESS cloſes the *Day*, and brings on the Night; 2
Confide ſtill in me, thy dear Lover and Friend,
Who hopes ſo to be unto my Life's End.

Mr *Sam. Squib* anſwers all the Ænigmas, in a Father's Advice to his Son; thus:

The *Sun* was ſet, and now the *Twilight* grey
With awful DARKNESS clos'd the parting Day; 2
When thus the *Father*, venerably grave
Theſe prudent *Maxims* to his *Pupil* gave.
My Son, CONTENT's the FUNDAMENTAL thing, 5, 7
From which your HOPES of *Happineſs* can ſpring; 6
This firſt purſue. Securely *Death* defy,
And *live* ſo well, as not to fear to die:
MODEST and *Patient* be; not idly vain; 4
From all Appearances of *Vice* refrain;
Nor like the WEATHER-COCK, with ev'ry *Wind* 3
Be always *changing*: To one State confin'd
Therewith be *eaſy*: No vaſt Fortune chooſe,
Which 'tis but vain to keep, yet Grief to loſe,
Fly *Pride*, the ſureſt Source of Coſt and Care,
Leſt, like the BELLOWS, now puff'd up with Air 1
You ſoon become depreſs'd. Theſe Rules obey,
Nor let *Temptation* you to *Vice* betray.

Mr *Robert Marſh* anſwers all the Ænigmas, Paradoxes, and Rebus, thus:

Let *Hammond's* BELLOWS blow the Fire, 1
Squib's DARKNESS to expel; 2
Whilſt *Mingle's* VANE, at your Deſire, 3
Where the Wind blows will tell.
Salaren's MODESTY and Love, 4
Hulſe with CONTENT does know; 5

Hammond's pure HOPE for Realms above,
Gives Peace to Minds below;
Fawſit's BACKSIDE (if I gueſs right)
From poor Dean *Swift* he ſtole,
Tranſpoſe the *Name*, and then you'll ſee
I've fairly hit the Whole.
Now for the *Rebus* I'll eſſay,
A thing which is not common,
At MELTON MOWBRAY, YESTERDAY, *Reb.* 2 *Par.*
I ſaw a pretty WOMAN. 1 *Par.*

Mr *Sam. Hammond*, of *Nottingham*, anſwers all the Ænigmas, Paradoxes, and Rebus, in * *Betty's* Anſwer to her deſponding Lover.

SIR,

Yours received YESTERDAY, 2 *Par.*
In Reply to which I ſay,
That I only ſeemed *ſhy*
To aſſay your Conſtancy.
MODESTY creates Deſire, 4
But the BELLOWS of Love's Fire 1
Are *Indiff'rence* and *Diſdain*;
For as in a *Calm* the VANE 3
Often wavers to and fro,
And no certain *Point* doth ſhew,
But a *ſtiffiſh* Gale of *Wind*
Keeps it ſteddy; ſo we find
Man is apt to waver if
WOMAN's gentle: But a ſtiff 1 *Par.*
Cold Behaviour keeps him ſteddy
To the Point, and always ready;
Very ſeldom turning TAIL 7
When he hardly does prevail.
Therefore lay aſide your GLOOM; 2
And, on my *Good-will* preſume;
But if that will not CONTENT, 5
Thus I give you my *Conſent*.
MELTON-MOWBRAY, *Leiceſter-ſhire*, *Reb.*
This Day Se'nnight meet me there.
And (O happy, bleſs'd Condition!)
HOPE ſhall vaniſh in Fruition. 6

In like manner they were anſwered by Mr John Simpleton, *Mr* Will. Swift, *Mr* John Skay, *Mr* Tho. Harbidge, *Mrs* Eliz. Williams, *Mr* R. Pitches *Schoolmaſter*, *Mrs* Sarah Swift, *Mr* John Hollingworth, *Mr* Joſeph Orchard, Henry Coppleſtone *Eſq.* *Mr* Cha. Maſon, *Mr* William Heaford, *Mr* Will. Sparke, *Mr* Francis Joce, *Mr* T. Royle, *Mr* Will. Mobbs, *Mr* John Williams *Jun.* *Mr* William Aldridge, *and ſeveral others, which, for want of Room, we are obliged to omit, and refer to the Catalogue of Contributors at the End.*

New MATHEMATICAL QUESTIONS *to be anſwer'd in the next* Year's Diary.

(1) Queſtion 101. by Mr *William Sutton.*

A Ship ſet ſail from a certain Port in North Latitude 50°, South Eaſt from the Meridian, at the ſame Time that another ſailed from a Port in North Lat. 40° South Weſt; and whoſe Difference of Long. from the former Port is 20° Eaſt; after they had ſailed ſome Days on the Arch of a great Circle, they came up with each other: From whence 'tis required, by a ſimple Equation, to find the Latitude of the Place where they met; and the Diſtance ſailed by each Ship.

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* See his Anſwer to the *Ænigmas* laſt Year.

(2) Queſt. 102 by Mr *John Randles.*

If the Sum of the Diſtances of the Hours of three and four in the Afternoon, from the Meridian or 12 a Clock Line be 82° 48′. *Quere* the Latitude for which this Horizontal Dial was made?

(3) Queſt. 103 by Mr *Abraham Lord.*

Suppoſe that in every ſingle Revolution of the upper Stone of a *Water-mill*, it evacuates or grinds One eighth of a Pint of *Meal*; and ſuppoſing there be Eight Standards or Pinions in the Rounds that turn it once; and that theſe Rounds are driven by a Wheel of 45 Teeth; alſo the *mean* Circumference of the Water Wheel on the ſame Axis be 40 Feet,. which requires One hundred and an Half to move it, or put it in Motion; Now, if a Flood-gate, whoſe Breadth is a Foot, and Height Half a Foot, and the Height of the Water be three Feet above the Surface of the Hole, be let run directly againſt the upper Surface of the Wheel; It is required to find the Quantity of *Meal* ground in an Hour by the ſaid Mill?

(4) Queſtion 104 by Mr *Abraham Lord.*

Suppoſe that a Cannon Ball was ſhot from the Ramparts of a Caſtle at 14,5 Miles high from the Surface of the Earth near the City of *London*, with a Velocity that would carry it over 2 Miles *per* Second, directly towards *Tangier* at an Angle of Elevation of 20°; It is required to find how far the *Ball* would fall from the ſaid Place, allowing the Earth's Radius 4000 Miles.

Note, Tangier *is in Lat.* 35° 55′, *and bears from* London 18° 6′ *from the South Weſtward; and diſtant* 18° 10′ *in the Arch of a great Circle.*

(5) Queſtion 105. by Mr *William Spicer.*

There is a ſpheroidal Caſk whoſe Bung Diam. is 32 38029 Inches; the Content = 97,38029 A. G. and the Head Diam. is $\frac{6}{7}$ of the Length; *Quere,* the Head Diameter and Length?

(6) Queſt. 106 by Mr *Thomas Perryam.*

Suppoſe $x^y = 5000$; $y^x = 3000$; *Quære* x and y by the common Table of Logarithms, and to give the Inveſtigation of the ſame?

(7) Queſtion 107 by Mr *Thomas Ward.*

Admit the Ends of a Line 22 Feet long were faſtened to the Tops of two Poſts 20 Feet aſunder, whoſe perpendicular Heights are, the one 5 Feet, the other 6; 'Tis required to find (by a Quadratic Equation) the Height of an upright Pole or Prop, which being placed between the two Poſts, 4 Feet diſtant from the ſhorteſt, ſhall juſt ſtreighten the Line?

(8) Queſtion 108. by Mr *Thomas Moſs.*

The Vertical Angle, the Sum of the perpendicular and leſſer Side, and the Ratio of the Difference of the Sides and Difference of the Segments of the Baſe of a plane Triangle being given; to conſtruct and determine the Triangle?

(9) Queſtion 109 by the ſame.

The Difference of Longitudes of two Places under the *Arctic Circle* being given; = 52°; to determine the Sun's Declination when he begins to appear to the Inhabitants of one Place at the ſame Inſtant of Time that he ſets to thoſe of the other?

(10) Queſtion 110 by Mr *Paul Sharp.*

Having given the Sides and Difference of the Diagonals of a Rhomboides, to determine the Area of the greateſt inſcribed Ellipſis, with the Inveſtigation of the ſame?

New ÆNIGMAS to be anſwer'd in the next Year's *Diary.*

(1) Ænigma 69 by Mr. *Tho. Peat* of *Caſtle Dunnington.*

BE ſilent, ye Bards, and attend to my Theme,
Who never till now, enter'd into the Scheme
Of *Ænigmatic* Rhyming in your famous *Diary*,
And if you have Patience I mean not to tire ye:
A *Monſter* in *Nature* I am, I'll aſſure ye,
And when I approach, I infallibly cure ye
Of *Phlegmatic* Humours, and ſtudious Pretences
Of *calmly* and *mildly* improving your Senſes.
I dwell with the *Buſy* in moſt Occupations,
In Country or City throughout the Three Nations:

But chiefly delight in *Heroical* Actions,
In *Fields*, crown'd with Honour, and mighty Tranſactions;
Where *Cannons* and *Mortars* (thoſe Dev'liſh Inventions)
Proclaim to the *World* the Grand *Monarque's* Intentions.
Sometimes you may find me in *Taverns* or *Stews*,
And in *Politic Shops*, in Debates o'er the News;
Where the *Beau* and the *Fop*, with the grave *Politician*,
Set up in their Turns for the *State*'s main Phyſician:
At *Churches* my conſtant Attendance I fix,
When *Organs* and *Voices* concordantly mix;
And not only then, but (I ſay with Submiſſion)
I'm preſent at ev'ry repeated *Petition*.
If what is here ſaid be not *Data* enough, Sir,
To find out my Name; I pray do not *huff*, Sir;
Rejoice and be merry, give on hearty *Huzza*,
And then you will find me, I boldly dare ſay.

(2) Ænigma 70 by Mrs. P——*n*.

Surprizing Store-houſe! in whoſe narrow Womb
All things; the paſt, the preſent, and to come,
Find ample Space, and large and mighty Room.
Nor Love, nor holy Friendſhip, without Thee
Could ever of the leaſt Duration be,
Nor *Gratitude*, nor *Truth*, nor *Piety*.
When thou art not, the cheerleſs Human Mind
Is one vaſt *Void*, all darkſome, ſad, and blind,
No Trace of *Any thing* remains behind.
The ſacred Stores of Learning all are Thine,
'Tis only Thou record'ſt the faithful Line;
'Tis Thou mak'ſt Human Kind almoſt Divine.
Now, what this is, *Ænigmatiſts* pray tell,
Wherein ſo many diff'rent Objects dwell
Like *Bees*, or *Waſps*, each in its proper *Cell*.

(3) Ænigma 71 by Mr *Sam. Squib*.

Ye *Youth*, whoſe ſubtle piercing Wit pervades,
And diſſipates the Riddles puzzling Shades,
Diſpel the gloomy Miſt that ſcreens my Name,
Look well at *Home*, you'll ſurely find the ſame:
I'm oft at *Church*, where rich (tho' gravely) dreſs'd
I give my kind Aſſiſtance to the *Prieſt*:
'Tis I the *Ladies* ev'ry where attend,
The *Gentry* chiefly do on me depend:
On Me (his firm Support) the *Judge* relies,
To Me the Man with *Pain* oppreſs'd applies,
And cur'd by Me, his former Eaſe enjoys.
By Me the tir'd and weary'd *Wretch* is eas'd:
Doctors be gone! by Me his *Pain's* appeas'd;
I ſit with *Lord Mayor* in his Chair of State;
And in his Coach and Six on him I wait;
But yet, alas! hard Fate! by all abus'd,
And moſt by thoſe, by whom I moſt am us'd:

The *Fair*, unmindful of my Service, tears
My Shape relentleſs with a Thouſand Spears;
The *Judge*, (whoſe Duty 'tis, to favour none
Nor none t' oppreſs, yet) Me, ev'n Me alone,
Oppreſſes: And the *Prieſt* full many a Blow
On me inflicts, all which I undergo,
'Till I no longer am a Favourite,
But uſeleſs grown, am diſregarded quite.

(4) Ænigma 72 by Mr *Sam. Hammond* of *Nottingham*, wherein all the laſt Year's *Ænigmas* are anſwer'd.

Of all who have *Ænigmas* writ,
I don't remember One hath hit
On me, tho' generally known,
And priz'd for Services I've done.
For't may, with MODESTY, be ſaid 4
That thro' me Thouſands get their Bread,
From th' BLACK, CONTENTED BELLOWS-mender 2, 5, 1
Thro' all *Degrees*, to th' *Faith's Defender*.
With fineſt Linen neat array'd,
And on a narrow Bridge diſplay'd,
From End to End I ſwiftly glide,
With *Belly* bare, and MOUTH OPE wide. 6
My *Food*'s the *Excrement* of one
That has a *Looſeneſs* and the *Stone*,
Who, like a Houſe upon a Rock,
Of *Winds* and *Waves* endures the Shock;
Yet is like VANES and *Ships*, inclin'd 3
To turn about with ev'ry *Wind*,
And to be driven with the *Flood*,
Whoſe *Ordure* always is, or ſhou'd
Be ſtrain'd, e'er it to me does come
Thro' my half Siſter's *hairy* BUM: 7
And (which ſtill makes the Wonder greater)
Reverſe to ev'ry *living* Creature,
The *finer* Particles of that
Which thus I in my *Belly* get
Perſpire thro' my *Pores* below;
For if a *Hole* was there, all know
The Excrement that took that Courſe
Would be conſiderably worſe.
But *groſſer* Parts I always ſpue
Out at my *Mouth*, and (ſtrangely true!)
My *Spue* and *Ordure* both are *Food*,
Tho' one as th' other's not ſo good.

(5) Ænigma 73 by *Philænigmata*.

Tho' ſprung I am from mean and low Degree,
From Parents poor derive my Pedigree;
Tho' from a *Dunghill* I ſhould chance to come,
Where oft, as Traſh and Refuſe, I am thrown;

Tho' afterwards, moſt cruelly I'm us'd,
Cut, ſlaſh'd, and mangled, beaten and abus'd;
Howe'er at laſt, (to make me ſome Amends)
Employ'd I am, to great and noble *Ends*:
To *Kings* and *Princes* free Admittance gain,
As well I may, ſince I their *Rights* maintain;
Ev'n *Ladies* too in me take great Delight,
And well they may, ſince I'm as *Fair* and White;
To me their *Love* and *Hatred* moſt impart,
To me commit the *Secrets* of their Heart.
Now, in myſelf I'm harmleſs as a *Dove*,
Yet, oft miſchievous as a *Serpent* prove
When *Cheats* and *Rogues*, the Simple to betray
Make me their *Tool*, Falſhood and Lyes to ſay;
But hold: I've ſaid enough to ſhew my Name,
Nor can you of Obſcurity complain,
And, if you find it not, you'll *Bluſh* for ſhame.

(6) Ænigma 74 by Mr *Samuel Hammond* of *Nottingham*.

I'm of the *Quadrupedal* Kind,
But diff'rent Stations are aſſign'd
Unto my *Limbs*, for ſometimes you
A *Leg* on either Side may view,
With *one* in Front, and *one* in Rear;
Tho' for the moſt part I appear
With *two* behind and *two* before,
A *Back* and Leaſe of *Ribs* or more.
I'm ſometimes furniſhed with *Arms*,
To keep my *Maſter* free from Harms,
Which may befall him when aſleep;
Or waking, when he's drank too deep.
Am very ſerviceable, down
From *Crowned Head* to *Country Clown*,
And ev'ry *Viſitant*, as ſoon
As uſual Compliments are done,
Is ſtraight by me accommodated;
Tho' I am with ill *Manners* treated.
I care not who finds out the *Riddle*;
My *Bottom's* always near my *Middle*.

(7) Ænigma 75. by *Sam. Squib*.

Artiſts, My Name you'll eaſily explore,
For I once grac'd your *Diary* before.
On Earth my grand Original began,
Where I remain, to cheer and comfort Man;
I wave his *Troubles*, and his *Grief* remove,
And *Balſam* am to heal the *Wounds* of Love;
The various Stages of *Man's* Life I trace,
And am *coæval* with a num'rous Race,
Who form'd like *Me*, in Youth are ſpotleſs, fair,
And all the Marks of *Innocence* do wear:

But oft, as *Age* advances, *We* decay,
And worn, in Length of Time, are caſt away.
Short is my *Date*, when I'm by Sots poſſeſs'd,
Whoſe moiſten'd Lips have often me careſs'd:
For, when they're ſeated o'er a Tankard, Bowl,
Or Bottle, then 'tis I that feaſt their Soul.
All Ranks of People pay Reſpect to me,
With whom I'm frequent ſeen in Company,
Where I amuſe, yield Pleaſure and Delight,
And oft diſpel the Darkneſs of the Night.

(8) Ænigma 76 by Mr *William Whalhead.*

A tolerable *lofty Style*
I'm honour'd with in *Britain's* Iſle:
But when employ'd by *France* or *Spain*,
One leſs ſublime my *Merits* gain.
Yet no *Ambition* fires my Breaſt,
No *Wealth* nor *Honour* court, but reſt
In th' Poſture I approve the beſt:
Indulged, I at ev'ry View
Inform you more than e'er you knew;
By always ſhewing ſomething new.
But, if confined to a Station
That ſuits not with my *Inclination*,
Duty, my Humour ſtraight denies,
Rudely, and ſhameleſs tell you Lies,
And all the Truth I boaſted dies.

ANAGRAM by Mr *Sam. Hammond* of *Nottingham.*

Well might that docile *Animal*, an *Angel's* Comp'ny merit
Whoſe Name revers'd (which pray diſcloſe) denominates a Spirit.

PARADOX by the ſame.

All Men will readily agree, that no one can tranſmit
A *Title* to *Poſterity* he ne'er enjoy'd, and yet
A certain Honourable Man, a *Baronet*, was born
Altho' his Father ne'er was one; nor laugh my Tale to ſcorn
When I affirm the *Title* came by Lineal Deſcent;
But ſtrive to reconcile the ſame; for no Deceit is in't.

REBUS 1 by *Philænigmata.*

The Defence of an *Houſe*, the Expreſſion of *Pain*,
What you meet with in POPE o'er and o'er again,
Is the Name of a Thing I would have you explain.

REBUS 2 by Mr *G. Farewell.*

Three Fourths of a Preſerver, and one *Half* of a Kiſs,
With the Cloſe of a Funeral added to this;
Gives the Name of a City both wealthy and fair,
Of old and of late renown'd far and near.

An *Alphabetical Catalogue* of CONTRIBUTORS to this Diary, ſhewing by the Numerical Letters i, ii, iii, &c. which Queſt. and by 1, 2, 3, 4, &c. what Ænigmas each anſwered.

Mr. *Tho. Allen* all Æ. both Par. and Reb. in verſe, Ecl. Mr. *Will. Aldridge* all Æ. both Par. and Reb. in verſe. Mr. *Sam. Beardſley* v, vi, viii. Prop. 1 Q. Mr *Ralph Brockſopp* vi, viii. 1, 2, 3. 4, 7. both Par. and Reb prop. 1 Q. Mr. *Will. Bevil* iv, v, vi, viii, x. prop. 1 Q. and 2 Par. Mr. *Sam. Bamfield* vii, viii, x. all Æ. in verſe, prop. 1 Æ. Mr *John Butcher Hodges* vi, viii. *Hen. Coppleſton* Eſq. all Æ. in verſe, 1 Par. and Reb. *Caſtalio* prop. 1 Æ. Mr *Richard Collins* 1, 2, 4, 5, 6, 7. both Par. and Reb. Mr *John Cheſter* all Æ. but 4. 1 Par. Reb. in verſe, prop. 1 Q. and Æ. Mr *Lhewellin Davies* i, vi, vii, viii. Mr *Benj. Don* all Q. and all Æ. 1 Par, and Reb. in verſe, Ecl. prop. 1 Q. and 3 Par. Mr *Will. Dickes* all Æ. both Par. prop. 1 Æ. Mr *Will. Earle* i, vi, vii, viii. Mr *Edw. Greenſtead* Ecl. Mr *Edw. Griffiths* vi, viii, all Æ. Par. and Reb. Mr *Tho. Garrard* i, ii, vi, x. Mr *John Hollingworth* iii, vi, viii. all Æ. Par. and Reb. in verſe. Ecl. prop. 1 Q. Mr *Tho. Harbridge* 1, 2, 6. Ecl. Mr *G. Harewell* all Æ. 1 Par. prop. 1 Reb. Mr *S. Heartly* i, iv, all Æ. 1 Par. and Reb. Mr *Will. Heaford* all Æ. in verſe, both Par. and Reb. prop. 1 Æ. Mr *Tho. Hare* vi, viii, ix, 1, 2, 4, 6, 7, both Par. and Rebus. : Mr *Sam. Hammond* all Æ. Par. and Reb. in verſe. prop. 2 Æ. 1 Par. 1 Anagram. Mr *Tho. Jaquis* prop. 1 Par. Mr *Dan. Iliff* all in verſe, prop. 2 Æ. Mr *Fra. Joce* all in verſe. Mr *Will. Jepſon*, iv. Mr *Will. Kingſtone* all Q. 1, 2, 3, 4, 5, 7. prop. 1 Q. Mr *Nathan Lomax* 1, 2, 3, 4, 5, 7, 1 Par. and Reb. in verſe. Mr *Edw. Laſhmar* Reb. verſe, prop. 1 Æ. Mr *Sam. Leaver* vi, viii, all Æ. Par. and Reb. Mr *Abr. Lord* all Q. all Æ. Par. Reb. and Ecl. prop. 3 Q. Mr *Cha. Maſon* ii, vii, all Æ. Par. and Reb. in ver. Ecl. prop. 1 Q. 2 Æ. and 1 Reb. *F. F. Mingle* all Æ. Par. and Reb. prop. 1 Reb. Mr *Rob. Marſh* all Æ. par. and Reb. in verſe. Mr *Tho. Moſs* all Q. prop. 3 Q. Mr *Will. Mobbs* i, all Æ. Par. and Reb. in verſe, prop. 1 Æ. Mr *Joſ. Orchard* vi, viii, all Æ. and Par. in verſe, prop. 1 Q. Mr *Tho. Peat* Jun. pr. 1 Æ. Mr *Will. Pleaſs* 1. 4. 7, prop. 1 Æ. Mr *Sam. Pilgrim* vii, 1, 2, 5, 6, 7. Mr *Tho. Perryam* v, vi, viii, ix, x, all Æ, but 2, both Par. and Reb. prop. 1 Q. Mr *J. Powle* ii, prop. 1 Q. Mr *Rob. Pain* vi, viii. Mr *Rob. Pickburn* prop. 1 Æ. Mr *R. Pitches* Schoolmaſter i, vi, vii, viii, ix, all Æ. Par. and Reb. in verſe, prop. 1 Q. Mr *John Randles* all Æ. prop. 2 Q. Mr *John Ramſey* 1, 2, 5, 7, 1 Par. verſe, Reb. Ecl. prop. 1 Reb. Mr *T. Royle* all Æ. Par. and Reb. in verſe. Mr *John Randles* both Par. and Reb. in verſe, Ecl Mr *Will. Sutton* 3, 4, 5, 6, Moon Ecl. prop. 1 Q. Mr *Rich. Shillito* prop. 1 Æ. Mr *Cha. Smith* iv, v, vi, vii, viii, ix, prop. 1 Q. *John Simpleton* all Æ. both Par. and Reb. verſe. Mr *John Skay* Ecl. Mrs *Sarah Swift* all Æ. Par. and Reb. verſe. Mr *Sam. Sector* 1, 2, 4, 7, 1 Par. and Reb. Mr *Will. Spark* all Æ. but 6, prop. 1 Æ. Mr *Sam. Squib* all Æ. Par. and Reb. verſe, prop. 1 Æ. Mr *Will. Spicer* iv, v, vi, vii, viii, ix, all Æ. verſe, prop. 3 Q. Mr *Geo. Stapley* i, ii, v, vi, all Æ. but 6 and 1 Par. Mr *Paul Sharp* i, ii, v, vi, all Æ. but 6, 1 Par. and Reb. prop. 1 Q. Mr *Roger Widger* i, vi, vii, viii, x. prop. 1 Q. Mr *Will. Wadham* Ecl. Mr *Jaſon Worral* 1, 2, 5, 6, 7, both Par. and Reb. *G. W.* all Par. and Reb. verſe, prop. 1 Æ. Mr *Will. Whalhead* vi, vii, viii, all Æ. but 6, both Par. and Ecl. Mr *Tho. Ward* vi, viii, prop. 1 Q. Mr *John White* vi, viii, all Æ. but 3. both Par. Mr *John Williams* Jun. i, vi, vii, viii, all Æ. Par. and Reb. in verſe, Ecl.

FINIS.